Can Elite Male Academy Players be Taught to Perform Under Pressure?

Sofie Kent

A thesis submitted in partial fulfilment of the requirements of University of Wolverhampton for the degree of Doctor of Philosophy

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This work or any part thereof has not previously been presented in any form to the University or to any other body whether for the purposes of assessment, publication or for any other purpose (unless otherwise indicated). Save for any express acknowledgments, references and/or bibliographies cited in the work, I confirm that the intellectual content of the work is the result of my own efforts and of no other person.

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Publications

Peer-Reviewed Journals

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Conference Proceedings

Kent, S., Devonport, T. J., Nicholls, W., Lane, A. M & Friesen. A.P. The Effects of Coping Interventions on Ability to Perform Under Pressure. BPS Division of Sport and Exercise Psychology conference. Cardiff, 2016.

Kent, S., Devonport, T. J., Nicholls, W & Lane, A. M. A Case Study of the Perceived Pressures in Age Group Professional Soccer. British Association of Sport and Exercice Science conference. Poster presentation. Harrogate 2018.

Kent, S., Devonport, T. J., Nicholls, W & Lane, A. M. An Age Group Intervention of Developing Performance Under Pressure in Academy Soccer. British Association of Sport and Exercice Science conference. Harrogate 2018.

Other

The Doctoral College Annual Researchers' internal poster competition at University of Wolverhampton. Presentation of: Kent, S., Devonport, T. J., Nicholls, W., Lane, A. M & Friesen. A.P. (2016) The Effects of Coping Interventions on Ability to Perform Under Pressure.

Inspire Coaching Education (2017). A webinar series with various practitioners and researchers presenting their work within elite level football with an emphasis on youth sport development.

Premier League Coaching Conference (2018): The premier league conference invited coaches from all Premier League and Category One Academies (approximately 160 to 170 coaches). The aim of the session was to provide coaches with an understanding of what performance pressure is, how we can help prepare players for pressure and the practical considerations for pressure training.

Science in Football Conference (2018): The science in football conference invited coaches and sport science staff from grass roots to premier league academies to gain an insight to applied practice within elite football. The conference included physiology, nutrition and strength and conditioning topics.

ABSTRACT

To gain a professional contract in UK academy football, young players must demonstrate an ability to perform under pressure (Larsen *et al.*, 2014). A systematic review was conducted to synthesise findings from applied studies that focus on interventions developed to enhance an individual's ability to cope under performance pressure. Simulation training alongside cognitive-behavioural (CB) workshops was an intervention format that may develop an academy football player's ability to perform within the highly-pressurised environment of academy football (Bell, Hardy and Beattie, 2013). A limitation of much simulation training that is intended to help individuals perform in highly-pressurised environments is the failure to generate meaningful performance pressure. Similarly, CB workshops can also be limited in their effectiveness due to a failure to identify contextually specific factors that may develop coping skills. Such factors should be embedded within CB workshops to align with the needs of individuals in their respective pressure domain. Moreover, study one of this programme of research aimed to identify meaningful pressure conditioned stimuli, along with factors perceived to be facilitative or debilitative of performance under pressure within academy soccer. The perceptions of pressure, and factors of influence identified within study one were used by academy coaches to inform the design of a contextually specific pressure intervention. Study two, presents and evaluates this pressure training intervention. A mixed-methods approach using quantitative (simulation training data) and qualitative data (interviews with players and reflective diary extracts) provided insight into the effectiveness of the pressure intervention. Findings indicate that simulation training alone could enhance performance under

pressure within age groups 11-14 years. Players across all age groups described improvement in confidence, emotional intelligence, meta-cognition, focus and challenge appraisal following the intervention. Future research is warranted to investigate the benefits of simulation training and CB workshops within a larger sample, over-time.

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CHAPTER ONE: INTRODUCTION

1.0 Introduction and Context of Research

Across various life domains an individual may be confronted with situations where the outcome hinges on one pressured moment. The mind-set of an individual plays a critical role in how one perceives pressure, makes decisions, and approaches or avoids such challenges. Baumeister and Showers (1986, p. 362) defined pressure as "the presence of situational incentives for optimal, maximal, or superior performance." Particularly, within high performance contexts such as business, medicine, military or sport, individuals encounter many incentives that induce pressure.

The desire to perform well in high-stake sporting situations can create performance pressure (Beilock and Carr, 2001). The ability to manage and cope with pressure dictates how well an individual functions in competition, and ultimately, whether they thrive, or merely manage or succumb to the pressure scenario (Sarkar and Fletcher, 2014). Indeed, there are many key moments within sporting history where athletes have failed to cope with pressure and underperformed. For example, Cate Campbell, Rio Olympic finalist (2016) and favourite to win the gold medal described how pressure influenced her ability to execute an optimal swimming performance:

'*You could not have been more ashamed of me than I was of myself…or have judged me harsher than I was (and to an extent still am) judging myself. I cared because my performance could reflect the brilliance of my coach and my amazing team…I wanted to be this image of myself that everyone else could see and yet I could not. I had under 60 seconds to fulfil, not only my dream, but the dreams of a nation, and I didn't do it.'*

Cate's experiences also highlight the many incentives that can induce performance pressure, including time (60 seconds), expectation (others and self) and personal incentives (dreams). The above quote also illustrates how an ability to cope with pressure is an essential prerequisite for athletic success due to the significant performance deterioration that can otherwise occur. Examples, such as Cate's have prompted the question 'can athletes be taught to perform under pressure?'

It must be acknowledged that, as well as presenting detrimental effects, pressure has also been established as a motivational driving force that can energise individuals towards optimal performance (Swann *et al.,* 2017). In an anecdotal example from Liverpool academy soccer player Trent Alexander-Arnold, he discusses how pressure can inspire and drive higher levels of performance:

'You can never be satisfied with anything in football because there's always someone trying to stop you getting to where you want to go…. Every day when I was told I was going to train with the first team I'd to take it day by day and get better and better… Putting yourself in high pressure situations is probably the best way of getting out the real you. Playing in a Champions League final is a dream come true and hopefully I get to play in a few more.'

Trent evidences a 'clutch' response, defined as "any performance increment or superior performance that occurs under pressure circumstances" (Otten, 2009, p. 584). A challenge laid down by athletes, coaches and sport practitioners is to help athletes achieve exceptional performances and develop adaptive responses to pressure more consistently (Harmison, 2011). Trent was part of Liverpool's soccer academy from the age of 6 years old. In reflecting on his rise to first-team soccer, the Liverpool academy manager suggested:

"You don't know until they are actually out there. You can say someone has huge potential but until they play in a competitive game under real pressure, you never really know until that moment. Up until that moment you just hope."

This anecdotal quote presents the notion of 'hope' and a lack of certainty in the preparation you may provide for an athlete to perform optimally within pinnacle moments of their sporting careers. Indeed, researchers discuss the 'difficulty to prepare athletes for pressure…it is not possible to train for these pressures as they are too high and context specific' (Oudejans and Pijpers, 2010, p. 44). This thesis aims to bridge the gap and increase confidence in the preparation of athletes to perform when it matters most.

1.1 Performing under pressure within elite soccer academies

Academy soccer players must learn to cope effectively with pressure if they are to pursue a professional football career (Holt and Dunn, 2004). More than 90% of those who join a Premiership academy will fail to make it into the first team, and of those players aged 16 to 18, 99% do not progress to have professional soccer careers (Wilkinson, 2017). So, whilst social media may paint a picture of academy soccer players has having a life of luxury, this lack of opportunity offers an alternative view highlighting the insecurities prevalent in high performance soccer (Wilkinson, 2017). Richardson, Gilbourne, and Littlewood (2004) have also described the soccer academy culture as harsh, brutal, and volatile. Players are part of a competitive learning environment that places high demands on performance development in the short and long term (Nerland, and Sæther, 2016). Such development environments with clear demands and expectations can be challenging for young players, for those who cannot cope this affects their experiences and personal development (Sagar, Lavallee, and

Spray, 2009) and can bring about an increase in negative emotions and ill-being (Hosek and Man, 1989).

1.2 Aims and Objectives of research

Performance under pressure can be influenced by the effectiveness of coping strategies used (Neil *et al.,* 2011). The intended function of coping strategies is determined by the appraisal and meaning that an individual may give to an important event (Lazarus, 2000). Lazarus (2000) indicated that the right kind of coping in an important moment could enhance an individual's ability to attend, concentrate, and perform effectively under pressure. Therefore, enhancing generic coping skills may ultimately increase performance in a number of pressurised contexts. Researching the subjective experience of excellent sport performances will build understanding of the processes underlying these outcomes, and the various strategies that help induce or prolong them (for example, through targeted psychological skills training). However, a criticism of coping research voiced by academics and practitioners alike is the lack of applied research that strives to bridge the gap between theory and practice (Dewe and Trenberth, 2004; Lazarus, 2001). Folkman (2009, p. 76) notes that in most coping research "what may ultimately be the most important translation - the translation to practice – is barely touched upon". Utilising theory to inform practice enables its practical utility to be evaluated by practitioners across a range of contexts (Michie *et al.*, 2008). The present programme of research will examine whether it is possible to prepare elite academy soccer players for pressure by developing, delivering and evaluating a theoretically informed pressure training programme. In the absence of a comprehensive review of pressure interventions and methodologies, and having undertaken a literature review of pressure theories, the programme of research begins by undertaking a systematic review of coping skills interventions intended to enhance

performance under pressure. The outcomes of this review will inform the development of a pressure training programme for male elite academy soccer players aged 11-18. This will then enable investigation of the primary research question 'can academy soccer players be taught to perform under pressure?'

1.3 Structure of thesis

This thesis is comprised of seven further chapters, within which the aims and objectives of this programme of research are addressed. Chapter two will review pressure theories through providing the applied implications and limitations relative to pressure interventions. In Chapter three a rationale for a systematic review of coping interventions intended to support performing under pressure, the published systematic review, and then a summary of key findings and implications for the development of pressure interventions is presented. In following these recommendations, chapter four offers a summary of literature on simulation training and cognitive behavioural therapy, identified by the systematic review as most effective in helping individuals to perform under pressure. Chapter five further supports intervention development describing the findings of a qualitative study intended to identify pressure conditioned stimuli, along with factors perceived to be protective or debilitative of performance in a professional soccer academy. Chapter six presents the intervention study and evaluation focused on developing the ability of male academy soccer players to perform. A general discussion of this intervention, summarising the key findings of the research programme and discussing theoretical and practical applied implications is offered within Chapter seven. This chapter also notes the strengths and limitations of the research programme before highlighting future research directions and conclusions. Finally, chapter eight offers a reflective discourse regarding the undertaking of a PhD programme, including reflections on the dual role as both practitioner and researcher.

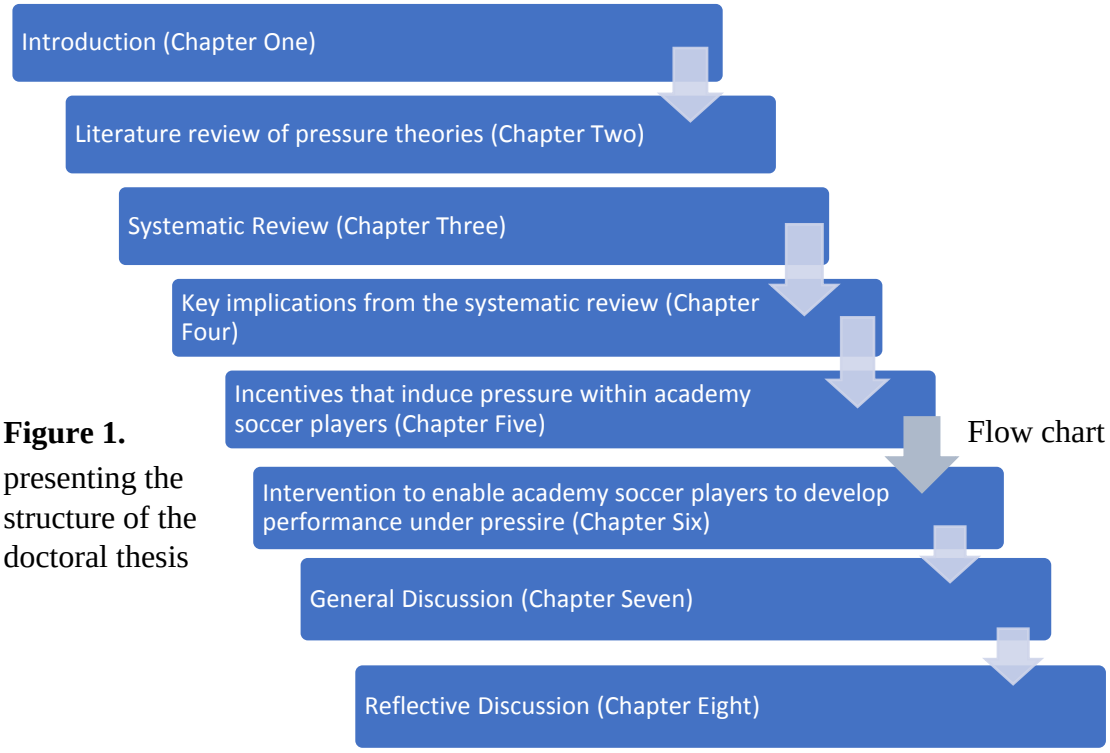

Figure 1. Flow chart presenting the structure of the doctoral thesis

CHAPTER TWO: REVIEW OF PRESSURE THOERY

2.0 Introduction

Chapter two presents a review of pressure theories and draws out implications for the examination of whether athletes can be taught to perform under pressure. The chapter begins by defining performance pressure and evidencing inconsistencies in the conceptual representation of pressure within sport psychology literature. An evaluative argument is presented on the importance of incorporating an empirically and theoretically supported definition of pressure when seeking to develop coping interventions. A historical overview of pressure theories is then presented enabling a critical review of pressure theories and the underlying mechanisms that may influence performance under pressure. Following this, areas of future study are identified presenting the rationale for the programme of research undertaken within this thesis.

2.1: Conceptual clarity: What is pressure?

Pressure has been examined in a range of contexts including business (Gardner, 2012), military (Eggensperger, 2004), sport (Stoker *et al.*, 2017), aviation (McClernon et al., 2010), and medical surgery (Hunziker *et al.,* 2013). Many theories and models have been proposed by authors to account predominantly for the severe decrements under pressure. Aligned with theories, but under researched is the notion of clutch performance, whereby pressure can produce performance improvements (Otten, 2009). Such theories can assist researchers to understanding the mechanisms which may influence an individual's performance and contribute towards the development of interventions (Balk *et al.,* 2012).

The nature and direction of future research examining performance pressure can be determined by the conceptual definition of pressure, with 'good conceptual definitions are a property of 'good' theory' (Wacker, 2004; p. 670). Without a formal conceptual definition, the outcome of research can be scientifically misunderstood or studied (Gould and Carson, 2008). Conceptual confusion is evident in the study of pressure, particularly in the understanding, operationalisation, and differentiation of stress and pressure, where at times these terms are used interchangeably (e.g., Nibbeling *et al.,* 2014). Stress is defined as "the process that involves the perception of a substantial imbalance between environmental demands and response capability, under conditions where failure to meet demand is perceived as having important consequences it is responded to with increased levels of state anxiety" (Martens, 1977, p. 9). Lazarus and Folkman (1984) emphasise how stress results from a transaction between the person and environment, whereby an appraisal of the significance of stimuli within that environment may have valence for well-being, rather than optimal performance.

Baumeister and Showers (1986, p. 362) define pressure as "the presence of situational incentives for optimal, maximal, or superior performance." Situational incentives may appear singly or in combination, they include the contingency of rewards or punishments on level of performance, the presence of an evaluative audience, the presence of comparison or competition, the extent to which performance reflects on important features of the self (i.e., ego relevance), and the likelihood that one will not have a second chance (Baumeister and Showers, 1986). Baumeister and Showers (1986) place emphasis on the situational and personal incentives that result in the perception that the execution of a performance calls for an optimal outcome. An extensive systematic review of pressure literature identified one further conceptualisation of pressure, Hardy, Mullen and Jones (1996, p. 621) conceptualised pressure as 'the anxious desire to perform to a high level within a given situation'.

However, any performer executing a motivated performance and should be expected to exhibit an element of anxiety in competitive settings (Martens, 1977; Hanton, Wadey and Mellalieu, 2008). Therefore, whilst a situation may be of motivational value to evoke anxiety, it does not differentiate between an important performance moment, and a 'pressure' moment that may evoke the desire for a superior performance.

Crown (2015) explained that by not distinguishing between stress and pressure it can lead to different aims and objectives for performance interventions. In a stressful situation, reduction or feeling less overwhelmed becomes the individual's goal, but in a pressure situation, performing successfully is the goal. Subsequently, by mis-aligning the critical differences between stress and pressure the individual may utilise incorrect coping resources within crucial moments for performance (Crown, 2015). The definition offered by Baumeister and Showers (1986) provides researchers with conceptual consistency in differentiating from constructs such as stress and anxiety (Christensen, Mcilwain, and Sutton, 2014). Thus, this is the definition that will be utilised to guide this programme of research.

2.2 Theories of Pressure and Performance Outcomes

The prevalence of evidence pertaining to a dramatic increase or deterioration in performance under pressure has generated a plethora of theories that seek to understand this phenomenon (Hill *et al.,* 2013). Pressure theories present under two classifications: (a) drive theories and (b) self-focus and attentional theories.

2.2.1 Drive Theories

Drive theories propose that performance under pressure can be determined by levels of 'drive' in which the optimum level of 'drive' can benefit or undermine performance. 'Drive' refers to the state of arousal caused by biological or physiological needs to achieve a particular goal or outcome. Arousal is defined as 'general

physiological and psychological activation of the organism which varies on a continuum from deep sleep to intense excitement*'* (Hebb, 1955, p. 243). This section will discuss the various drive theories presented within pressure literature and how they may contribute towards the development of theoretically-underpinned pressure interventions.

2.2.1.1 Yerkes and Dodson (1908) Drive Theory

The origins of drive theory lie with Yerkes and Dodson (1908) who investigated the influence of 'drive' in the form of arousal and the influence on behaviour in rats. Yerkes and Dodson (1908) discovered that mild electrical shocks could be used to motivate rats to complete a maze task. However, when the electrical shocks became too strong, the rats' performance to escape become random and erratic. Yerkes and Dodson (1908) drive theory suggested that performance outcomes under pressure may represent a 'bell-shaped' curve. This curve suggested that by increasing arousal levels and increase in focus, motivation and attention on the task at hand could enhance performance, but only up to a certain point in which performance would then decrease. The findings of Yerkes and Dodson (1908) cannot be used to infer outcomes for humans due to discrepancies between humans and rats. For example, the cognitive functions that include motivational and emotional responses of a human can be significantly different to that of a rat. The graphical 'bell-shaped curve' presented by Yerkes and Dodson (1908) did also not include how the requirements that may influence the task undertaken could influence the shape of the curve. For example, archery which may require low levels of arousal for precision in comparison to a rugby tackle which may require high levels of arousal for power and strength. To enhance the understanding of the relationship between pressure and performance it was important to extend this research within human psychology and different domains of sporting endeavour (Spence and Spence, 1966).

2.2.1.2 *Inverted U Theory (Hebb, 1955; Spence and Spence, 1966)*

Inverted U theory was presented to illustrate the notion of optimum arousal levels, and how this may vary across tasks. In contrast to Yerkes and Dodson (1908) the Inverted U theory posits that for every task there is an optimum level of arousal, usually of moderate intensity, that produces ultimate performance. Levels above optimum arousal evoke anxiety which is defined as an 'aversive emotional and motivational state occurring in threatening circumstances' (Eysenck and Calvo, 1992 p. 409) and a strong inverse relationship with success. Arousal levels below this optimum level are also argued to result in inferior performance. Inverted U offered a greater insight into performance variation between individuals, in comparison to the graphical representation of the Yerkes and Dodson 'bell-shaped' curve. However, Fisher and Zwart (1982) challenged the contribution of the Inverted U theory to applied practice as the theory does not reflect anecdotal evidence regarding when performers may experience 'choking'. Equally, Fisher and Zwart (1982) stated that the theory only attends to the maintenance of performance and does not discuss individuals' ability to excel under pressure. Therefore, the symmetric shape does not represent the significant deterioration or enhancement that can occur when performing under pressure.

The development of interventions to facilitate performance derived from the Inverted U theory is limited because it does also not attempt to explain the individual mechanisms that may influence individuals' levels of arousal within a performance task (Eysenck and Wilson, 1984). For instance, in a baseball context, Fisher and Zwart (1982) identified that different levels of arousal were attributed to the way in which individuals perceived the performance task. Low levels of arousal were attributed to relaxation or boredom and high levels of arousal were suggested to be indicative of excitement or anxiety. In order to understand behavioural variance in sporting

performance, one must consider an individuals' meaning attributed to a task (Fisher and Zwart, 1982). For example, when individuals perceived to be uncertain about the outcome of the performance task higher levels of arousal and anxiety were induced (Fisher and Zwart, 1982). Finally, Inverted U does also not consider how an individual interprets their perception of arousal. Specifically, for some individuals' high levels of arousal can be interpreted as debilitative for performance, in contrast examples within the literature identify that high levels of arousal can be interpreted as facilitative for performance and increase focus and/or effort (Neil, Mellalieu and Fletcher, 2011). Subsequently, in the development of pressure interventions a key component in understanding how individuals may perform under pressure is understanding the meaning they attribute to the performance task.

2.2.1.3 Cusp Catastrophe Model (CCM) (Hardy and Fazey, 1988)

Hardy and Fazey (1988) stated that a main limitation with previous pressure theories and models is the lack of explanation in the relationship between arousal and performance. One reason for this may have been a result of the interchangeable usage of the terms anxiety and arousal. The cusp catastrophe model (CCM) was developed to address this limitation by incorporating cognitive anxiety to distinguish between anxiety and arousal. Cognitive anxiety was defined as the 'negative expectations and cognitive concerns about oneself, the situation at hand and potential consequences' (Morris, Davis, and Hutchings, 1981, p. 541). The CCM postulates a similar U-shaped relationship between arousal and performance, however, this relationship is maintained only when cognitive anxiety is low. When cognitive anxiety is high, increases in arousal are related to enhanced performance until a certain point, after which a dramatic (catastrophic) deterioration of performance occurs (Hardy, Jones and Gould, 1996).

Therefore, arousal would be related to performance in an inverted-u fashion under conditions of low cognitive anxiety.

Early empirical research by Hardy and Parfitt (1991) tested the CCM during a basketball free-throw task (‘an unopposed one-opportunity shot to score’) by manipulating physiological arousal (e.g. different levels of physical activity by heart rate) within a basketball shooting task. The authors suggested that results from this experiment indicated support for the CCM, however several methodological limitations were identified in the validity of this study. First, participants were asked to complete two familiarisation sessions of the basket-ball task within the low physiological arousal session and thus arguably developed coping skills to manage the demands of the experimental condition. The familiarisation condition would arguably reduce levels of cognitive anxiety as the performer could build confidence from the familiarization and learn coping skills to focus on helpful performance cues. What this research did identify was the challenge for researchers to examine the accuracy of pressure theory and intervention effectiveness by generating experimental conditions that are able to maintain goal-relevance and perceived pressure throughout the investigation (Blascovich and Mendes, 2000). Subsequently, Cohen, Pargman, and Tenenbaum (2003) suggested it is important to design a more rigorous research strategy to test the CCM. Cohen, Pargman, and Tenenbaum (2003) tested dart throwing performance under varying levels of elevated physiological arousal and performance changes within high and low cognitive and somatic anxiety conditions to align with the assumptions of the model. The results indicated that, under conditions of elevated cognitive anxiety, no catastrophic performance decrements occurred in dart throwing performance. Additionally, within the elevated cognitive anxiety condition at a certain level of physiological arousal performance did not also drop as is predicted by the CCM. Moreover, when examining performance under pressure it is important to apply more

sophisticated multidimensional approaches that consider the nature of the motor task, environmental conditions, and task meaning.

2.2.1.4 Biopsychosocial Model (BPSM: Blascovich et al., 2003)

The Biopsychosocial model (BPSM; Blascovich *et al.,* 2003) seeks to explain individual differences in performance under pressure (Hase *et al.,* 2018). It presents a drive perspective intended to advance understanding of an individual's performance under pressure by integrating cognitive, dispositional, physiological, and social dimensions. Lazarus (1999) appraisal perspective is a core component in the BPSM, by which an individual's response to pressure is determined by their evaluation of situational demands and personal coping resources (Blascovich, Seery, and Weisbuch, 2008). The BPSM suggests that the type of appraisal given to the performance situation is represented by challenge and threat. The appraisal of challenge and threat alter an individual's psychophysiological responses which may then moderate the success of performance under pressure (Blascovich *et al.,* 2008). A threat state is defined as when individual perceives they have insufficient resources (e.g., skill, knowledge, social support, or equipment) to meet the demands of a situation. Threat states are proposed to hinder performance as they are associated with disrupted attentional control, increased heart rate, and muscular tension (Blascovich *et al.,* 2008). Whereas a challenge state is when an individual perceives sufficient resources to meet the demands of a situation (Lazarus, 1999). Challenge states are associated with superior performance when compared with a threat state due to improved decision making and maintained cognitive function (Turner *et al.,* 2013).

In a recent systematic review Hase *et al.* (2018) reviewed studies investigating challenge and threat states in a manner congruent with the BPSM to establish any influence of motivational states on performance under performance. The review found

largely beneficial effects of challenge states on underlying cognitive (i.e., underlying demand/resource evaluations) and physiological (i.e., accompanying cardiovascular responses) responses that were facilitate of performance (Hase *et al.*, 2018). In contrast, threat states where personal coping resources are evaluated as insufficient to meet situational demands, produced reduced performance.

In contrast to the complexity of the CCM the BPSM offers clear practical implications through advocating that interventions should facilitate the development of coping resources that support the appraisal of highly pressurised competition as a challenge (Moore *et al.*, 2015). However, some theorists argue that challenge and threat appraisals can be experienced simultaneously (Lazarus and Folkman, 1984). Therefore, in order to overcome this potential theoretical limitation BPSM research is often examining relative differences in challenge and threat (i.e., greater vs. lesser challenge or threat) rather than absolute differences (Seery, 2011).

2.3 Applied implications of Drive Theories in Developing Performance Under Pressure

Past literature evidences the evolution of drive theories, and each has aimed to build upon the limitations of previously well adopted theories or models (Jones, 1995). For instance, the CCM presented the multidimensional relationship of arousal-anxiety and performance. However, as Gill (1994) stated, whilst this may help theorists in their understanding of how a performance decrement may occur under pressure, the complexity of this model may not help practitioners in the development of pressure interventions. A commonality across drive theories is the recognition and importance of physiological markers (e.g., neuroendocrine changes, heart rate changes) and how physiological mechanisms may influence performance and how appraisal can play a central role in underpinning performance differences under pressure. Subsequently, the

CCM sparked theoretical debate due to the removal of the somatic anxiety component at the expense of physiological arousal. The removal of somatic anxiety illuminated the 'directional perception' component of arousal symptoms that can indirectly affect performance (Hanton and Connaughton, 2002). For example, physiological arousal may be interpreted as exciting and important for optimal performance, rather than unhelpful and maladaptive. This highlights a particular strength of the BPSM regarding the inclusion of 'directional perceptions' (Paunonen and LeBel, 2012). Additionally, the indexing of performance data into challenge and threat motivational states has informed the development of coping under pressure interventions intended to assist athletes' in optimally appraising highly pressurised competitions (Paunonen and LeBel, 2012).

However, by arguably simplifying appraisals, the BPSM does not adequately account for individuals who may display 'dual styles' of appraisal (Lazarus, 1999; Meijen *et al.*, 2013). As such, there is a need to pay closer attention to the mechanisms (e.g., emotions) that underpin challenge and threat appraisals, rather than simply identifying the two states. Particularly, such 'pitfalls' were evidenced by Turner *et al.* (2013) when examining cardiovascular reactivity–performance relationships. Counter to theoretical predictions, participants exhibiting threat reactivity performed well, and some participants exhibiting a challenge state performed poorly (Turner *et al.*, 2013). Gendolla *et al.* (2005) offer a plausible explanation for such findings whereby the authors identified that negative emotions can boost somatic symptoms (e.g., heart rate) and influence effort mobilisation due to their informational impact on subjective demand during performance. Mixed methods approaches' to understanding performance under pressure may overcome such limitations. Objective data may be gathered through physiological measures, whilst understanding of the personal meaning an individual attributes' to somatic and cognitive anxiety and arousal symptoms can be gained through qualitative approaches.

2.4 Attentional Theories

Attentional theories posit that pressure situations evoke anxiety which has a disruptive role upon performance (Beilock and Carr, 2001). Anxiety is suggested to disrupt the allocation of attentional resources and impacting upon gaze and motor behaviour which subsequently influences performance (Derakshan, Smyth, and Eysenck, 2009). In order to explain performance under pressure Baumeister and Showers (1984) proposed that 'researchers concern should be with articulating and comparing self-focus and distraction theories' (p. 376). This next section will present the two core clusters of attentional theories that seek to explain performance and pressure associations, those being a) self-focus and b) distraction theories.

2.4.1 Self-focus Theory

Self-focus theories (e.g., self-focus theory - Baumeister, 1984; explicit monitoring hypothesis - Beilock and Carr, 2001) suggest that a means of performing well under pressure is to reduce levels of conscious cognitive control. Cognitive control is proposed to be disruptive of motor performance, refocussing an individual's execution of skill back to early stages of learning, fragmenting the automacity of skilled performance, and causing performance quality to decline (e.g., Beilock *et al.*, 2002; Masters, 1992). Self-focus theorists argue that the anxious desire to perform is what may result in 'an attentional shift towards the self' (Cheng *et al*., 2009, p. 272). Of all the self-focus theories, Reinvestment theory (Masters, 1992) is widely used in sport psychology research (Kinrade, Jackson, and Ashford, 2015).

2.4.1.1 ***Reinvestment Theory (Masters, 1992)***

Reinvestment theory proposed by Masters (1992) suggested that a skilled performer consciously controlling technique through 'reinvestment' may ironically disrupt performance of technical skills and lead to error (Wegner, 1998). Reinvestment

refers to the ‘manipulation of conscious, explicit, rule-based knowledge, by working memory, to control the mechanics of one’s movements during motor output’ (Masters and Maxwell, 2004, p. 208) or ‘the tendency to direct conscious attention to the mechanical details of how the skill should be performed’ (Masters, 2008, p. 90). Mesagno and Beckmann (2017) discussed that with increased automaticity there is an increase in neuro-efficiency, and that when under pressure, brain areas involved with reinvestment disrupt the flow of expert skill execution resulting in increased kinematic variance that may produce significant deviations from normal performance. Reinvestment theory (Masters, 1992) would advocate that coaches should help individuals learn skills in whole, rather than chunking to facilitate automaticity. Additionally, skills should be learnt whilst in distracting conditions in order to reduce the acquisition of explicit knowledge. However, Hill *et al.* (2010) found that whilst participants performing a pressurised task did report an increase in skill-focused attention, this was not always detrimental. Christensen *et al.* (2015) argued that this maybe because performance is never fully automatic; and that for some individuals a swift, flexible, dynamic cognition can help shape performance under pressure. For example, when taking a free-kick Real Madrid football player Gareth Bale spoke about a conscious process in skill execution ‘I take four steps back and one to the side, focus on the valve and then hit the ball as flat as you can with your foot.’ This suggests a conscious control over task execution not necessarily debilitative for performance. With respect to individual differences Masters *et al.* (1993) developed the Reinvestment Scale (RS) and found that individuals classified as ‘high reinvestors’ were more likely to suffer skill failure under pressure than ‘low reinvestors’ (e.g., Kinrade *et al.*, 2010, Masters *et al.*, 1993) Masters, Eves, and Maxwell (2005) suggested that utilising the Reinvestment Scale could help provide information regarding how susceptible

individuals are to reinvestment and how likely they are to become self-conscious under pressure. This could then inform the suitability of intervention for the individual.

2.4.2 Distraction Theories

The central tenant across distraction theories is the view that anxiety may impair performance by diverting attention away from (processing efficiency theory - PET; Eysenck and Calvo, 1992), or towards task-relevant cues (attentional control theory - ACT; Eysenck *et al.,* 2007), resulting in the consumption of working memory and utilising resources once devoted to performing a task (Beilock *et al.,* 2006; DeCaro *et al.,* 2011). Two competing distraction theories (efficiency and attentional) have been proposed to account for performance under pressure, with a particular emphasis on the decrements of performance (Beilcock and Carr, 2001). This section of the thesis will discuss that while both theories fall under the 'distraction' umbrella, and present different mechanisms for different competitive domains, they can be complementary rather than mutually exclusive to understanding performance under pressure (Beilock and Carr, 2001).

2.4.2.1 Processing Efficiency Theory (PET; Eysenck and Calvo, 1992)

Processing efficiency theory (PET) (Eysenck and Calvo, 1992) contends that anxiety has a multi-dimensional effect upon the speed of processing and storage capacity of the working memory, which subsequently impacts performance. Within the PET theory, Eysenck and Calvo (1992) differentiate between performance effectiveness and processing efficiency. Performance effectiveness refers to the quality of task performance, in comparison to an individual's processing efficiency, which refers to the effort (Eysenck and Calvo, 1992). Processing efficiency may be impacted if an individual is unable to cope with anxiety in achieving optimal performance. An individuals' ability to manage anxiety determines the extent to which they utilise

storage and processing resources, reducing the effective attentional capacity that is available to execute skill or effective decisions (Wilson, 2008). Within sports that require rapid decision making and action-relevant information whist executing a skill (e.g., soccer), athletes may be particularly susceptible to a decrement in performance if anxiety is not managed effectively. However, PET theory states that anxiety may also be facilitative of performance, whereby the concern to perform optimally serves a motivational function via a self-regulatory control system that increase the allocation of additional processing resources. Wilson, Smith and Holmes (2007) identified that some performers were able to maintain performance despite increased state anxiety and a reduction in processing efficiency, as predicted by PET. Therefore, compensatory efforts that sufficiently draw upon additional processing resources can maintain performance quality, motivation, and effectiveness (Eysenck and Calvo, 1992). It seems pressure can enable some individual's to invest more effort to ensure that performance does not fall below expectations (Woodman and Hardy, 2001). The consideration of compensatory effort within the PET in comparison to reinvestment theory helps explain variance in performance effects under pressure (Wilson, Smith and Holmes, 2007).

2.4.2.2 *Attentional Control Theory (Eysenck et al., 2007)*

Attentional Control Theory (ACT; Eysenck *et al.,* 2007) proposes that perceived pressure can change attentional mechanisms and memory structures that facilitate (Beilock and Gray, 2007). ACT posits that attention is controlled by the working memory and is determined by how effectively an individual control the top-down goal directed system or a bottom-up stimulus driven system (Eysenck *et al.,* 2007). The top-down goal directed system; in the frontal cortex part of the brain, prepares and applies appropriate action responses to the current goals of the performer (e.g., gaze control).

The bottom-up stimulus-driven system; located in the inferior frontal cortex, directs attention to the physical characteristics of the scene (Eysenck *et al.,* 2007).

ACT contends that performance under pressure may decline when an individual's detection of threat may evoke anxiety and negative thoughts, which then causes the 'bottom-up' system to dominate over the efficient top-down goal driven processes (Eysenck *et al.,* 2007; Wilson, 2008). According to ACT the appraisal of the salient threat (e.g. degree of perceived importance) causes a diversion of processing resources from task relevant stimuli toward task irrelevant (and particularly threatening) stimuli. Eysenck *et al.* (2007) postulated that individuals who are able to distribute attentional resources and maintain a balance between the two systems will sustain performance. However, impairment in attentional control is proposed to occur as anxiety alters the strength of output from the bottom-up system, and the likelihood that threat-related stimuli will capture attention is increased (Eysenck *et al.,* 2007). Subsequently, if top-down attentional control is required to effectively complete a task, such stimulus-driven (ventral) processing will likely impair effective attentional control and potentially task performance. This might suggest why greater empirical support for ACT has been noted within tasks of high complexity (Derakshan *et al.,* 2009). For instance, in a test of basketball free throws, Moore *et al.* (2015) identified that individuals receiving 'quiet eye' (spatial and temporal coordination of gaze and motor control) training maintained more effective visual attentional control and performed significantly better when performing under pressure in comparison to a control group. This provides support for the efficacy of attentional training for visuo-motor skills, and also supports the predictions of ACT regarding proceduralised skills.

2.5 Critique of Attentional Theories

Both self-focus and distraction theories suggest that emotional responses to pressure can temporarily change the way the body is functioning (Nesse and Ellsworth, 2009). A specific emphasis of both self-focus and distraction theories is the impact of anxiety, and how an inability cope with anxiety may be dysfunctional and disrupt performance. Self-focus theories contend that anxiety may evoke a performer to place greater focus on skill execution, whereas attentional theories suggest that anxiety may evoke greater attention to performance cues. Distraction theories are in line with the evolutionary argument that emotion, such as anxiety; might not drive performance, but provide contextual information on the situation, the individual, and their goals (Lane *et al.*, 2016; Nesse, 1990). For some, this may be dysfunctional and disrupt performance, but for others the same emotion may benefit performance in particular situations' and increase the ability of individuals to cope with situational demands (Nesse, 1990, p. 284). Subsequently, self-focus theory could be perceived as limited because they do not sufficiently account for situational appraisals of pressure that have been found to influence physiological and emotional responses to pressure (Lazarus, 2000; Turner *et al.*, 2013).

Studies testing attentional theory have also been supportive of self-focus accounts (e.g., Beilock and Carr, 2001; Gucciardi and Dimmock, 2008; Masters, 1992). It is possible, that the theories may be somewhat complimentary; self-focus accounts provide a potential explanation for how increased effort may be directed inappropriately and disrupt fine motor tasks, whereas PET and ACT may explain how increased effort can aid gross motor performance (e.g., Edwards *et al.*, 2002). Moreover, self-focus accounts of performance under pressure maybe more applicable within automated motor skills, whereas PET maybe more relevant within memory-based decision-making tasks such as remembering technical patterns and play within football or rugby. In contrast to self-focus theories, two distraction theories (efficiency and attentional) were presented

complementary rather than mutually exclusive for different competitive domains (Beilock and Carr, 2001).

2.6 Coping Skills

Drive and distraction theories state that anxiety does not always directly result in a significant detrimental impact upon the actual quality of performance (Eysenck *et al.,* 2007). This can be explained by the fact that anxious individuals often engage coping strategies to mitigate the potentially debilitative effects of anxiety on performance. Coping refers to all volitional cognitive and behavioural efforts that are directed at managing performance pressure or stress (Nicholls, Hemming and Clough, 2010). The types of coping efforts employed by an individual are underpinned by the appraisal of an event and the interplay between the person and the situational factors (Lazarus, 1999). The notion of appraisal is aligned with later drive (e.g., BPSM; Blascovich *et al.*, 2007) and attentional theories (e.g., ACT; Eysenck *et al.,* 2007) in which the emotion of anxiety is believed to influence psychological and/or physiological factors that impact performance. Coping can shape the type, direction and intensity of emotion experienced by an individual (Nicholls *et al.*, 2010). Enhancing the use of the appropriate coping strategies at the correct time may attenuate or eliminate the debilitative effects of anxiety, and help an individual perform effectively under pressure (Jensen and Wrisberg, 2014). A broad range of coping interventions have been developed to help individuals perform under pressure, however, it is unclear which are most effective in helping individuals withstand, or even thrive on the pressure they experience (Sarkar and Fletcher, 2014).

2.7 Applied Implications of Pressure Theories for Intervention Development

An intervention programme informed by theory can improve intervention design and efficacy by focusing research questions, placing them in a logical order, and

providing a framework within which findings can be interpreted (Folkman, 2009). The practitioner or researcher is also able to target specific protective or debilitative factors that have been established to be key determinants of performance. For instance, interventions underpinned by drive theory would focus on developing strategies to regulate arousal levels such as; reappraisal. In an illustrative example, Moore *et al.,* (2015) developed an arousal reappraisal intervention which encouraged individuals to view pressure-induced elevations in physiological arousal (e.g., racing heart) as a tool that can aid performance. Subsequently, the review of pressure theory and models provide the 'building blocks' for intervention design, implementation and means of evaluation (Rutter and Quine, 2002).

Interventions such as quiet eye training were informed by attentional based theories (Beilock and Gray, 2007) providing a technique for coaches to guide visuo-motor skill learning, and for sport psychologists to guide sport-specific coping strategies for attentional focus under pressure (Wilson and Richards, 2010). In an example of a study informed by drive theory, Vine *et al.* (2015) found that pilots evaluating an aviation motor performance task as a challenge, as opposed to a threat, exhibited better attentional control and performance under pressure. Drive theories also describe how an individual's appraisal of the pressurised situation influences their psychophysiological state which may be beneficial (challenge) or debilitative (threat) to performance. As such, interventions that aim to facilitate challenge appraisal may help people to successfully cope with pressure. In their case study of the elite rugby world cup winning rugby squad, Hodge and Smith (2014) recommended the identification of incentives that induce pressure unique to the sport, then mentoring athletes to appraise these incentives as challenges through cognitive restructuring then design training simulations to enhance decision-making and problem-solving under game-like pressure.

Although empirical studies have enabled researchers to challenge theory to build interventions, a key limitation is the lack of ecologically valid samples or case-studies. Particularly, case studies permit researchers to investigate phenomena in greater detail and within a natural context (Collinsamp and Durrand-Bush, 2010). Rather, much of the published research utilised opportunistic sampling, for example, college students in a golf putting task (Oudejans and Pijper, 2010), and is conducted under artificial conditions such as a laboratory based research project (e.g., Tedesqui and Orlick, 2015). Pressure impacting upon arousal, attention or distraction may be particularly important in sports where athletes are required to make quick and accurate decisions within continuously changing environments (Roca *et al.,* 2011). Therefore, pressure research in ecologically valid contexts that carefully controls for task demands will better inform a critical evaluation of theory and intervention development.

A further limitation is the lack of pressure research conducted within adolescent populations. Whilst the available research with child and adolescent populations have thus far supported drive (Jones *et al.,* 2009) and distraction-based theories (Waszczuk, *et al.,* 2015), cognitive and social development during adolescence may contribute to increased anxiety in evaluative domains and questioned the applicability of pressure theories with adolescent populations (Westenberg *et al.,* 2011). Thus, there is a need for further examination of performing under pressure among child and adolescent populations.

2.8 Conclusion

This chapter has focussed on the discussion of pressure theory and how it may contribute to the current understanding of performance under pressure. A clear theoretical alignment was the notion that should a performance situation not generate appraisals of importance, there will not be a pressure response. Across drive and

attentional theories a clear emphasis is placed upon emotion, suggesting that pressure can manifest emotions that temporarily change the way the body is functioning (Nesse and Ellsworth, 2009). However, the influence of appraisal of optimal performance may affect performance through various mechanisms such as self-focus (Masters, 1992) or drive (BPSM; Blascovich *et al.,* 2007). Therefore, this chapter concluded that when seeking to develop coping competencies to facilitate performance under pressure a key aspect would be to examine the influence of appraisal.

One limitation of drive and attentional theories presented is the implications that could be derived from understanding the specific mechanisms of performance under pressure. Overall, a clear emphasis across pressure theories, models and empirical literature is on how pressure may induce performance decrements. Consequently, this may limit practitioners understanding in what type of coping intervention could be used to induce a 'clutch' (over-perform under pressure) rather than sustaining performance levels under pressure. One method that may assist in providing clarity on such issues is the conduction of a systematic review. A systematic review is a review that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review and summarize the results of the included studies (PRISMA, 2018). The choice of a systematic review was prompted because a meta-analysis of the literature would not be suitable, as a ''Meta-analysis is only properly applicable if the data summarised are homogenous'' (Eysenck, 1995, p. 70) and the proposed systematic review will draw upon coping interventions that have been developed to assist individuals from any performance domain to perform under pressure. A systematic review will aim to classify the impact of studies against standardised criteria such as information on research design (e.g. sampling strategy, data collection methods) which can enhance the understanding on intervention designs and methodologies that may have the most

impact, validity and causality (Mallet *et al.*, 2012). By synthesizing the findings from psychological coping-pressure literature the researcher can be make an evidence-informed decision in developing most appropriate intervention to develop coping skill to facilitate performance under pressure. Moreover, chapter three will undertake, present and discuss the findings and implications of a systematic review that will underpin the development of a coping under pressure intervention.

CHAPTER THREE: SYSTEMATIC REVIEW

3.0: *Introduction*

A range of coping interventions being presented within the literature what is not clear is what interventions may be most efficacious and effective in helping individuals develop the coping skills and strategies to withstand – or even thrive on – the pressure they experience (Sarkar and Fletcher, 2014). There is a rising importance to developing coping skills which enable an individual to manage the thoughts and behaviours used to manage the internal and external demands of a pressurised situation (Ito and Matsushima, 2016). The undertaking of a systematic review will enable the synthesis of findings from applied studies that focus on delivering interventions intended to enhance an individual's ability to cope with, and thus perform under pressure.

More specifically within in the context of academy youth soccer, coping skills play a vital part in regulating physiological and psychological states that are affected by pressure moments (DeCaro *et al.*, 2011). The inability to execute coping skills may result in a significant deterioration in one' execution of skill or decision making, relative to their skill level (Tedesqui and Orlick, 2015). A player entering or within the academy system is part of a competitive learning environment that can place high demands and expectations on performance development in the short and long term (Nerland and Sæther, 2016). Subsequently, coping strategies that help an individual regulate perceived demands in an important moment could enhance an individual's ability to attend, concentrate, and perform effectively under pressure (Jensen and Wrisberg, 2014). Furthermore, by extracting and synthesising information on intervention design, impact, validity and causality can offer the researcher implications for the measurement and evaluation of a psychological intervention that aims to develop

the coping skills of elite academy soccer players performance under pressure (Higgins, 2015).

3.1: Published Systematic Review

The Effects of Coping Interventions on Ability to Perform Under Pressure

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Key words: Pressure, stress, anxiety, emotion, mental toughness, achievement.

Abstract

The ability to perform under pressure is necessary to achieve goals in various domains of life. We conducted a systematic review to synthesise findings from applied studies that focus on interventions developed to enhance an individual's ability to cope under performance pressure. Following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines, a comprehensive search of five electronic databases was conducted. This yielded 66,618 records, of which 23 peer review papers met inclusion criteria of containing an intervention that targeted coping skills for performing under pressure. Using the Standard Quality Assessment for evaluation of primary research papers (Kmet et al., 2004) to assess quality, included studies performed well on reporting research objectives, research design, and statistical procedures. Sixteen studies showed poor quality in controlling for potentially confounding factors and small sample sizes. A narrative aggregate synthesis identified intervention studies that provided an educational focus (n = 9), consultancy sessions (n = 6), simulation training (n = 5) and emotion regulation strategies (n = 3). Findings highlight a need to; 1) establish a contextualized pressure task which will generate high levels of ecological validity for participants. Having established a suitable pressure task, 2) research should assess the effects of pressure by evaluating conscious and nonconscious effects and associated coping mechanisms, which should inform the subsequent development of interventions, and 3) assess interventions to enhance understanding of the ways in which they improve coping with pressure, or may fail, and the mechanisms which may explain these outcomes.

Key words

Introduction

Across different domains in life, an individual may be confronted with situations, where the outcome hinges on one pressured moment. For example, a medic attending an emergency, a child in an examination, a footballer taking a penalty kick, or a soldier in combat. Performing in professional environments can often require individuals to make split-second decisions, maintain fine motor control under physical and mental fatigue—underpinned by the knowledge that the performance outcome can result in consequences of risk or reward (Anderson and Gustafsberg, 2016).

A known requirement in producing excellence is the ability for an individual to execute vital self-regulatory processes under pressure (Baumeister, 1984; Jordet, 2009). Pressure is defined as “the presence of situational incentives for optimal, maximal, or superior performance” (Baumeister and Showers, 1986, p. 362). These processes enable an individual to regulate physiological and psychological states to help movement and decision-making that help goal achievement (Vickers and Lewinski, 2012). Individuals who are unable to employ effective coping skills to regulate physiological and psychological states affected by pressure may underperform, relative to their skill level (DeCaro et al., 2011). Coping strategies that help an individual regulate

perceived demands in an important moment could enhance an individual's ability to attend, concentrate, and perform effectively under pressure (Jensen and Wrisberg, 2014). An individual's capacity to perform under pressure may be improved by developing availability of coping strategies, increasing coping flexibility, developing knowledge of when to utilise different strategies, and enhancing confidence in their application (Duhachek and Kelting, 2009). This would enable individuals to maintain performance in contexts that require optimal or superior performance (Adler et al., 2015). Consequently, researchers and practitioners have strived to better understand what interventions may be most efficacious and effective in helping individuals develop the coping skills and strategies to withstand – or even thrive on – the pressure they experience (Sarkar and Fletcher, 2014).

Conceptual clarity is important for theory testing and consequently it is important for researchers to define the constructs under examination (Lane and Terry, 2000). Conceptual confusion has been evidenced in differentiating stress and pressure, where at times these terms are used interchangeably (e.g., Nibbeling et al., 2014). Stress is defined as "the process that involves the perception of a substantial imbalance between environmental demands and response capability, under conditions where failure to meet demand is perceived as having important consequences it is responded to with increased levels of state anxiety" (Martens, 1977, p. 9). Lazarus and Folkman (1984) emphasize how stress results from a transaction between the person and environment, whereby an appraisal of the significance of stimuli within that environment may have valence for well-being, rather than optimal performance. By contrast, pressure is characterized by the presence of incentives that result in an appraisal that the execution of a performance calls for an optimal outcome, improved performance, or enhanced functioning (Baumeister, 1984; Hill et al., 2011). Appraisal of the significance of stimuli within the environment is focussed on valence for optimal performance rather than well-being (Baumeister, 1984). Situational incentives may appear singly or in combination, and might include the contingency of rewards or punishments on level of performance, the presence of an evaluative audience, the presence of comparison or competition, the extent to which performance reflects on important features of the self (i.e., ego relevance), and the likelihood that one will not have a second chance (Baumeister and Showers, 1986). An inability to cope with pressure can results in a critical deterioration in skill execution, leading to substandard performance at a time when a successful outcome is normally attainable (Hill et al., 2011).

In order to synthesise existing knowledge on coping interventions intended to help individuals perform under pressure, and identify future research directions, the authors undertook a systematic review of relevant published intervention literature. The choice of a systematic review was prompted because a meta-analysis of the literature would not be suitable, as a ''Meta-analysis is only properly applicable if the data summarised are homogenous'' (Eysenck, 1995, p. 70). The large discrepancy anticipated when examining studies from different areas of application (e.g variety of participant sample sizes, data collection methods and interventions) would pay no attention to the fact that an intervention may be appropriate for one context but may not apply to another. The resultant effect size could be misleading, and thus unhelpful for practitioners and researchers alike (Eysenck, 1995).

The aims were to; (a) examine the influence of coping interventions on performance under pressure, and (b) offer a critique of the extant literature and offer recommendations intended to enhance future pressure intervention research.

Methods

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Higgins and Green, 2009; Petticrew and Roberts, 2005) were used. The review was registered on PROSPERO (CRD42015027916) and aims, inclusion criteria, data extraction and data quality evaluation were specified at the outset. The rationale for using this method is that it is a commonly agreed approach and that ensures methodological rigour, objectivity and replicability.

Literature search

A systematic search was undertaken using the databases Business Source Complete, Education Course Complete, PsycINFO, MEDLINE, and SPORTDiscus. Search terms described coping, performance, and intervention. The term "pressure" was not included as a search term as scoping searches identified this as "physical pressure" and not relevant to the present review. In adhering to the inclusion criteria, the authors included only those intervention studies that explicitly aimed to enhance coping with performance 'pressure' (incentives for optimal, superior or optimal performance; Baumeister, 1986) and not stressors (e.g., reference to stress and well-being, with no mention of optimal, superior or

maximal performance, Lazarus and Folkman, 1984). Pressure was therefore defined by pooling descriptors of "coping," and "performance," and the term "intervention" was used to delimit to studies that intended to help manage pressure (see Appendix A). No delimiters on the time frame of searches were imposed, with literature dating from November 1901 to 23rd November 2016 included within the search. The search was delimited to peer-reviewed articles, "human only" studies (for MEDLINE), and English language. No other restrictions were applied to ensure that the search was comprehensive and that no articles were missed.

Searches

Reference management software was used to organise citations (Endnote X7). This search yielded 66,618 records, of which 60,725 remained following de-duplication. The titles were independently screened by three reviewers to identify studies that facilitated or manipulated coping skills with the intention of facilitating optimal performance of a task of perceived importance. Where there was disagreement, the full text manuscript was consulted by two reviewers to reach agreement. For a study to be included, there had to be consensus that the following criteria were met:

Inclusion

a) Papers must be empirical and peer reviewed (i.e., no reviews, letters, book reviews, theses, non- peer reviewed articles, or magazine editorials);
b) Participants must be exposed to a performance context that presents situational incentives for perceived optimal, superior or maximal performance (Baumeister and Showers, 1986)
c) The study must include an intervention where the aim was to facilitate or manipulate coping skills with the intention to improve performance under pressure;
d) All studies must be in the English language;
e) There must be an inclusion of a quantitative outcome measure (e.g., performance scores, inventory scores);
f) Studies must only include a non-clinical population.

Following title screening, 60,550 were excluded and the full text from 214 studies were further assessed for eligibility. A further 191 papers were excluded at this stage. These included; papers without a specific aim of delivering a coping intervention to facilitate performing under pressure (*n* = 52), papers with no measurement of the intervention upon performance (*n* = 38), intervention intended to support skill acquisition (e.g., reading) (*n* = 26), theoretical papers which described but did not deliver an intervention (*n* = 25), unpublished theses (*n* = 14), review papers (*n* = 13), papers which aimed to develop decision-making (*n* = 7), papers with a medical population (*n* = 7), papers not reported in English (*n* = 4), papers which developed coping inventories (*n* = 3), and conference presentations (*n* = 2). Following full inclusion assessment, 23 papers were included in the present review (Figure 1).

Data quality

The quality of included papers was assessed using the standard quality assessment criteria for evaluating primary research papers (Kmet et al., 2004). The 20 criteria

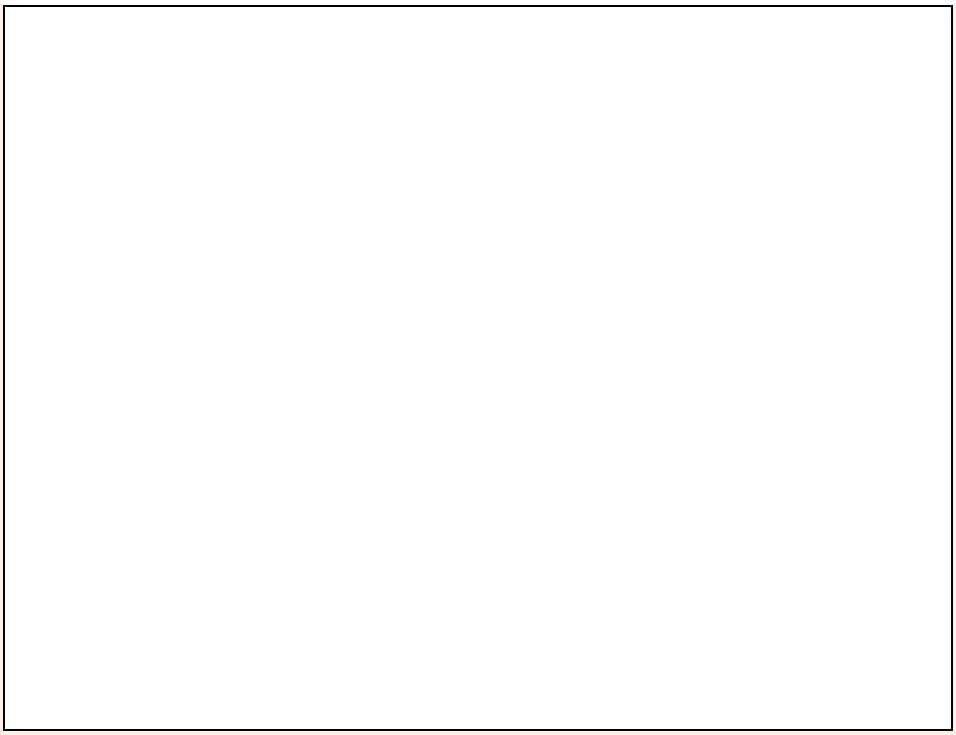

Figure 1. **Process of screening for selection of studies for inclusion in review.**

produced by Kmet et al. (2004) cover research design, sampling, methodology, analysis, results, and conclusions. For each criterion, papers are scored 2 (good), 1 (partial fulfilment), 0 (not fulfilled) or X (not relevant) (Kmet et al., 2004). A mean score was calculated for each paper to give an overall rating of quality. The mean score across all papers for each of the 20 criterion was calculated to indicate methodological or design strengths and limitations of the included studies.

Results

Characteristics of the included studies

Included papers (see Table 1) delivered coping under pressure interventions across a range of psychological contexts namely; Sport (*n* = 15), Medical (*n* = 2), Educational (*n* = 2), Occupational (*n* = 2), Forensic (*n* = 1), and Military (*n* = 1). Intervention duration ranged from a 10-minute single intervention (Hunziker et al., 2013) to a three-year simulation programme (Beauchamp et al., 2012). Interventions were described as being delivered by researchers with no mention of psychology qualifications or experience of delivering interventions (*n* = 6), psychologists with reported experience of delivering interventions (*n* = 8), therapists professionally trained to deliver an intervention (*n* = 2), video or computer simulation (*n* = 2), or not reported (*n* = 5).

The number of participants ranged from 1 to 209 (*M* = 42.8; SD = 58.6), with the reported age ranging from 15.9 to 45.6 years (M = 24.6; SD = 3.9). Studies were largely from Western countries, namely; UK (*n* = 6), USA (*n* = 6), Australia (*n* = 4), Canada (*n* = 2), Finland (*n* = 1), Holland (*n* = 1), Japan (*n* = 1), Spain (*n* = 1), and Switzerland (*n* = 1). Studies were conducted with a predominantly male sample (*M* = 71%; all male samples studies = 5).

Interventions were delivered using either an A-B (*n* = 13), A-B-A (*n* = 8), or A-B-A-B experimental design (*n* = 2). An A-B experimental design incorporates a baseline condition (e.g., pre-intervention performance score under pressure) (A), followed by the introduction of a coping intervention with the aim of improving performance under pressure (B). An A-B-A research design involves participants being monitored at a baseline condition (A), thereafter receiving a coping intervention (B), after which they return to the baseline condition (A). As part of an A-B-A-B research design participants are monitored twice at a baseline condition (no pressure manipulations) (A), receiving a monitored coping with pressure intervention on two occasions (B). The two B conditions vary in their degree of pressure, with the first B condition being low pressure, and the second being high pressure (Mesagno et al., 2008; 2009).

The majority (*n* = 9) of A-B interventions employed a comparison/control group which provided performance results of a pressurized task without intervention (e.g., emotion regulation technique) to allow for estimates of intervention effects and causality to be inferred (Chambless and Ollendick, 2001) (See Table 2). For example, receiving neutral instructions (Moore et al., 2015) or no instructions after the pressure performance (Hunziker et al., 2013).

Four studies did not incorporate a control group (Beauchamp et al., 2012; Meyers and Schleser, 1980; Olusoga et al., 2014; Prapavessis et al., 1992), and explained that this was due to either financial, temporal, or practical constraints (e.g., case study methodology).

Table 1. **Selection of studies for inclusion in review.**

Author	Title	Design / Sample	Type of Intervention	Pressure manipulation	Control Condition	Measures	Outcome
Abbott et al. (2009)	The impact of online resilience training for sales managers on wellbeing and performance.	A-B-A Occupational	Cognitive- behavioral workshop	Natural experiment-number of sales by managers.	The control group consisted of a randomly allocated sample of (occupational) sales managers from an Australian industrial organization based in home-offices. Control group participants continued their usual sales job with no intervention.	Depression Anxiety and Stress Scales (DASS21; Lovibond and Lovibond, 1995) Pre-intervention (prior to starting the program), post-intervention and at follow-up (10-weeks after the end of the program). Work performance statistics (meeting sales targets).	Both groups (experimental and control) met more of their target gross margin after the intervention than at baseline, but there were no differences in work performance between groups. No significant difference between intervention and control groups on depression, anxiety, stress or quality of life measures.
Balk et al. (2013)	Coping under pressure: Employing emotion regulation strategies to enhance performance under pressure.	A-B Sport	Emotional regulation strategy during pressurized task	Laboratory study-Golf putting task with additional pressure variables (videotaping participants and financial incentive).	Self-selecting participants from a golf club and then randomly assigned to the control group. Control participants were given no emotional regulation strategy, only to feel their emotions freely.	Pressure/ tension subscale from the Intrinsic Motivation Inventory (Deci and Ryan, 1994). The number of successfully holed putts (range 0–10). Heart Rate (HR). Arousal and anxiety scale (Fisk and Warr, 1996) The number of successfully holed putts (range 0–10).	The use of distraction, had improved performance under pressure. Reappraisal maintained performance under pressure Distraction condition reported higher levels of arousal.
Beaucha mp et al. (2012)	An integrated biofeedback and psychological skills training program for Canada's Olympic short-track speed skating team.	A-B Sport	Simulation	Field experiment-simulation training of short-track speed skating performance with additional pressure variables (crowd noise, picture of the performance venue).	No control condition	Heart rate, respiration, muscle activity, skin temperature, Ottawa Mental Skills Assessment Test (OMSAT-3) (Durand-Bush et al., 2001), Cognitive-State-Anxiety- Inventory- 2 (CSAI-2) (Martens et al., 1990), Recovery-Stress Questionnaire (RESTQ-Sport) (Kellmann and Kallus, 2001). Test of Attentional and Interpersonal Style (TAIS) (included a performance under pressure element and confidence) (Nideffer, 1976). Interviews.	The short-track speed skating team achieved their medal target of two gold medals, two silver medals, and one bronze medal.

Bell et al.(2013)	Enhancing mental toughness and performance under pressure in elite young cricketers: A 2-year longitudinal intervention.	A-B Sport	Simulation	Field experiment- cricket training drills with additional pressure variables (punishments for not meeting performance standards).	Players that were not selected as a future potential for the England program were asked to join a comparison control group. Continued usual training program.	Mental Toughness Inventory, Performance, (Woodman and Hardy, 2001) Cricket performance on batting, bowling and fitness tests.	Punishments, and more specifically the threat of punishment enhanced performance under pressure. Importance of transformational leadership and coping support in facilitating this intervention.

Table 1. Continued …..

Author	Title	Design / Sample	Type of Intervention	Pressure manipulation	Control Condition	Measures	Outcome
Björkstrand et al. (2013)	Evaluation of an imagery intervention to improve penalty taking ability in soccer: A study of two junior girls teams.	A-B Sport	Cognitive- behavioral workshop	**Laboratory experiment-** Penalty soccer kick with additional pressure variables (competitive comparison, publishing data, psychologists observing performance).	Two soccer teams took part. Both teams were randomly assigned into a control or intervention group. Control group were 'Active' and given a stretching routine rather than a psychological intervention.	The Finnish Athletic Coping Skills Inventory-28 (Peaking under pressure) (Smith et al., 1995) Bespoke self-efficacy and situational anxiety scale. Number of goals scored.	No significant difference in performance between intervention and the control group Players who scored high on a scale measuring ability to peak under pressure showed significant improvement in penalty taking ability.
Breso et al. (2009)	Can a self-efficacy-based intervention decrease burnout, increase engagement, and enhance performance? A quasi-experimental study.	A-B-A Educational	Psychological consultancy session	**Natural experiment-** the number of exams passed over the school year.	Control group were volunteers that participated in the academic stress and anxiety workshop but chose to not receive the one-on-one intervention program.	Academic self-efficacy (Midgley et al., 2000), Academic assessment and academic burnout (Schaufeli et al., 2002). Exams passed	The intervened group presented higher levels of performance. The intervened group presented higher levels of self-efficacy and task engagement.
Crocker et al. (1988)	Cognitive-affective stress management training with high performance youth volleyball players: Effects on affect,	A-B Sport	Cognitive- behavioral workshop	**Field experiment**- volleyball serving drill (delivered to North region of Canada volleyball team)	Those from the southern region of Canada comprised of the control group, which received no intervention.	Performance scores. SCAT (Sport Competition Anxiety Test) (Martens, 1977), CSAI-2 (Martens et al., 1990)	Improved performance compared to the control group. No significant difference in trait or state anxiety.

	cognition, and performance.			during a training session.		and thought listing procedure Volleyball serving drill performance.	
Griffiths et al. (1985)	The effects of relaxation and cognitive rehearsal on the anxiety levels and performance of scuba students.	A-B Sport	Cognitive- behavioral workshop	**Natural experiment**- Scuba diving performance	Control group consisted of enrolled novice SCUBA divers receiving basic SCUBA diving training with no relaxation/cognitive rehearsal intervention.	Respiration rate, state-trait anxiety inventory general trait (Spielberger et al., 1983). Bespoke measures of anxiety.	Pre-dive anxiety reduced before the task, however lack of transference when performing the actual pressurized task. Significant improved performance for the experimental group in comparison to the control group perform the underwater task.
Hunziker et al. (2013)	Impact of a stress coping strategy on perceived stress levels and performance during a simulated cardiopulmonary resuscitation: a randomized controlled trial.	A-B Medical	Cognitive- behavioural workshop	**Laboratory experiment**- simulated medical emergency (cardiac arrest)	Students were randomly allocated into the control group and took part in a video training session and a baseline test.	Bespoke measures of stress (post intervention).	A significant benefit in terms of reducing perceived levels of stress/overload. No statistically significant improvement in performance was observed.

Table 1. Continued …..

Author	Title	Design / Sample	Type of Intervention	Pressure manipulation	Control Condition	Measures	Outcome
McClernon et al. (2011)	Stress training improves performance during a stressful flight.	A-B Military	Simulation	**Laboratory experiment-** Simulation of piloting an aircraft.	Control participants were recruited from the Naval Postgraduate School and randomly allocated to received identical flight skill acquisition training but without 'psychological'	Bespoke measures of stress. Performance of flight. (post intervention)	Flight simulation training enhanced performance (telemetry data, certified flight instructor evaluations) than control participants. Significant reduction in perceived stress.

				training.			
Meyers & Schleser (1980)	A cognitive behaviour intervention for improving basketball performance.	A-B Sport	Psychological consultancy session	**Natural experiment-** basketball match performance for each game of the athlete's 28-game basketball season.	No control condition	Performance statistics (minutes played, field goals attempted, field goals made, foul shots attempted, foul shots made, and total points scored) (pre and post intervention)	Measured effectiveness from global performance scores only. Points per game increased significantly after intervention.
Moore et al. (2015)	Reappraising Threat- How to Optimize Performance Under Threat	A-B Sport	Emotion regulation strategy	**Laboratory study**- Reward. Performance comparison. Video. 'non-contingent' feedback. Negative	Participants were randomly assigned to a reappraisal or control group. Control group received neutral instructions that informed the participants about a nondemanding cognitive task in which they had to think about capital cities for one minute.	Challenge and threat states after the pressure and reappraisal/control instructions (computed by converting each participant's cardiac output and total peripheral resistance residualized change scores into z-scores). Performance statistics (the distance the ball finished from the hole in centimetres).	Despite performing similarly at baseline, the reappraisal group outperformed the control group during the pressurized task.
Olusoga et al. (2014)	Coaching under pressure: Mental skills training for sports coaches.	A-B Sport	Psychological consultancy session	**Natural experiment**- Intervention delivered to sports coaches to cope with competition demands during the competitive season.	No control condition	Mental Skills Questionnaire (MSQ; Bull et al., 1996) Social Validation Questionnaire (SVQ) (Thelwell & Greenlees, 2003 (Did the coping under pressure intervention help?) MCOPE (Crocker et al., 1995) CSAI-2 (Martens et al., 1990) Qualitative interviews. Subjective coaching performance.	Coaches rated their ability to perform under pressure; positive changes in perceived ability to cope. Reduced perceived intensity of somatic anxiety. Sharing experiences building self-confidence, and developing the ability to physically relax.

Page et al. (2015)	Brief mental skills training improves memory and performance in high stress police cadet training.	A-B Forensic	Cognitive-behavioral workshop	**Laboratory experiment**- police officers replicating a defensive spray incident.	The control group comprised of police cadets undergoing OC (oleoresin capsicum) spray training. Control participants were randomly selected and then moved to a different classroom and attended a 75-minute lecture on cardiovascular physiology.	Bespoke confidence, level of stress, and pain. Heart rate (HR) and hemoglobin-oxygen saturation (SpO2) Recall of information (memory) from the defensive spray incident.	No difference in heart rate or Sp02 values post intervention. Cadets that reported being more confident had better memories. Significant difference in performance- police officer's ability to recall more salient aspects of the scenario.
Prapavessis et al. (1992)	Self-regulation training, state anxiety, and sport performance: A psychophysiological case study.	A-B Sport	Psychological consultancy session	**Natural experiment**-shooting performance for a competitive rifle shooter	No control condition	CSAI-2 (Martens et al., 1990). Electromyogram. Heart Rate. Urine testing for catecholamine (i.e., noradrenaline and adrenaline). behavioral state anxiety (movement of gun) was measured using accelerometer. Performance scores (3 rounds of 20 shots).	Intervention was effective in improving shooting performance. Effective in reducing state anxiety and enhancing confidence which was perceived to be beneficial for the performer.

Table 1. Continued …..

Author	Title	Design / Sample	Type of Intervention	Pressure manipulation	Control Condition	Measures	Outcome
Kimura et al. (2015)	Effect of a brief training program based on cognitive behavioral therapy in improving work performance: A randomized	A-B-A Occupational	Cognitive-behavioral workshop	**Natural experiment-** number of sales from employees.	Control participants were randomly allocated to receive no intervention and continued work performance tasks.	Researcher designed cognitive flexibility scale and self-evaluation of stress.	Subjective performance scores indicated an improved performance. No significant difference in dysfunctional thinking patterns in comparison to baseline.

	controlled trial.						
Lorains et al. (2013)	An above real time training intervention for sport decision making.	A-B-A Sport	Simulation	**Laboratory experiment**- video simulation of Australian rules football with additional time pressure.	Participants were randomly allocated into the control group where they received no training or practice for the pressure task.	Global performance scores of reaction times and decision-making.	Decision-making accuracy was increased by training in above real-time simulations, on the computer-based task, compared to normal speed training or no training at all
Wetzel et al. (2011)	Stress management training for surgeons-a randomized, controlled, intervention study.	A-B-A Medical	Simulation	**Laboratory experiment**- simulation of a surgical operation.	Surgeons were randomly assigned into a control group and completed the pressurized task at baseline, but then received no treatment before re-test.	Heart rate/ Heart rate variability, salivary cortisol. State-Trait-Anxiety-Inventory (STAI; Marteau and Becker, 1992). Bespoke stress and confidence scale. Surgical decision making (DM)—observer rating of the surgeon's decision process.	The experience of a simulated surgical crisis was regarded as beneficial for enhancing performance. In addition, surgeons reported an increase in practicing technical skills decision making under pressure and confidence. Enhanced observational teamwork. Reduced heart rate variability during simulated surgery.
Wood & Wilson (2012)	Quiet-eye (QE) training, perceived control and performing under pressure.	A-B-A Sport	Cognitive-behavioural workshop	**Lab Experiment-** Soccer penalty kick task with additional pressure variables (Only one kick, financial incentive, random order, different goalkeeper was used in contrast to the training conditions.	Participants were randomly allocated to a control group which practiced taking penalties and received basic information on taking penalties. They were instructed to score as many goals as possible.	Gaze control, Control beliefs (Jordet et al., 2006) Mental Readiness Form-3 (MRF-3; Krane, 1994) Shooting accuracy	QE training was successful in optimizing aiming behavior; encouraging participants to aim for the optimal area of the target facilitating optimum performance under pressure. Positive impact upon the control beliefs of the performer. Control beliefs appeared to be related to intensity of state anxiety and the way in which the penalty taker approached the shot.
Mesagno at al. (2008)	A pre-performance routine to alleviate choking in "choking-susceptible" athletes.	A-B-A-B Sport	Cognitive-behavioural workshop	**Field experiment**-tenpin bowling performance with pressure variables (videotaping all shots, audience presence, money).	No control condition	Self-Consciousness (Fenigstein et al., 1975). Sport Anxiety Scale (Smith et al., 1990) Coping Style Inventory (Anshel and Kaissidis, 1997). CSAI-2 (Martens et al., 1990) Performance error, from center	In a sample of 'choking susceptible participants' performance of ten pin bowling significantly improved. Reduction in self-awareness and provided a method of maintaining task-relevant cues, especially after an unsuccessful shot. Pre-performance

						of the target to center of the ball. Qualitative interviews	routine useful in reducing negative self-talk and help maintain task-related focus.

Table 1. Continued …..

Author	Title	Design / Sample	Type of Intervention	Pressure manipulation	Control Condition	Measures	Outcome
Mesagno et al. (2009)	Alleviating choking: The sounds of distraction.	A-B-A-B Sport	Emotion regulation strategy	**Field experiment**- performing a basketball task with pressure variables (videotaping all shots, audience presence and money).	No control condition	Self-Consciousness (Fenigstein et al., 1975). Sport Anxiety Scale (Smith et al., 1990) Coping Style Inventory (Anshel and Kaissidis, 1997). CSAI-2 (Martens, 1990) Free-throw shooting percentage (total successful free throws in each trial block) Qualitative interviews	Reduction in the intensity of somatic anxiety. Audience/ fear of underperforming was biggest perceived pressure.

All A-B-A interventions used a control group which received no intervention. A-B-A-B interventions did not present a control group because of the difficulty in recruiting participants who met the inclusion criteria for the study (Mesagno et al., 2008; 2009).

Various measures were used as indicators of coping intervention effectiveness including; points scored on a task; (*n* = 13; e.g., exam marks), psychological inventories (*n* = 25; most often [*n* = 6] the Competitive Anxiety Inventory-2; Martens et al., 1990), physiological variability/ biofeedback measurements (*n* = 6; heart rate most used *n* = 3), coded verbal statements such as leadership statements or thoughts in response to a stressor (*n* = 3), or perception of performance by an organisational leader/coach (*n* = 2).

Interventions delivered across the 23 studies included cognitive-behavioral workshops (CBW; *n* = 9), psychology consultancy sessions (*n* = 6), emotional regulation strategies (*n* = 3), and simulation tasks (*n* = 5). CBW workshops were classroom-based education sessions focused on mental preparation principles and the development of psychological skills. Psychology consultancy sessions were delivered with the aim of establishing a therapeutic environment (e.g., genuine compassion, empathetic understanding) placing emphasis on a person-centred approach. Emotional regulation strategies were brief interventions provided to a performer before competing in a pressurized, single-trial, motor task. Finally, simulation tasks involved practice of the performance task/skill in an environment replicating the pressure-conditioned stimuli an individual would experience (Jones and Hardy, 1990).

Data quality

The possible range of scores on quality assessment was 0–2, with a higher score indicating better quality (Kmet et al., 2004). The mean scores and standard deviation (SD) for the 20 criterion of study quality are presented in Table 2. Across included studies, the mean score for quality was 1.41 (SD = 0.23), with scores ranging from 0.94 (SD = 0.82; Meyers and Schleser, 1980) to 1.83 (SD = 0.39; Hunziker et al., 2013). Nine studies scored more than one standard deviation below the sample mean (Abbott et. al., 2009; Beauchamp et al., 2012; Crocker et. al., 1988; Griffiths et. al., 1985; Mesagno et al., 2008; 2009; Meyers and Schleser, 1980; Moore et. al., 2015; Wetzel et al., 2011). These studies were included within the review as they contribute towards a useful critique of existing pressure intervention literature, however their findings should be interpreted with caution.

Overall, studies performed well on reporting the objective of the research process, with the research design being easily identifiable and appropriate to

address the study question. Studies also used a variety of statistical procedures to help establish credibility/trustworthiness of the data. However, studies underperformed on attempting to control, or consider the control of potentially confounding variables, and also on use of inadequate sample sizes.

Table 2. Data quality table of included studies.

Item	Indicator of quality	Mean	(SD)
12	Data analyses in accordance to treatment	2	0.29
2	Description of study design	1.91	0.49
1	Hypothesis	1.91	0.39
19	Description of main findings	1.91	0.51
15	Estimates of Variance	1.91	0.38
10	Description of trial components	1.86	0.48
3	Description of outcome measures	1.82	0.44
14	Description of methods for analysis	1.77	0.46
13	Reliable and valid measures	1.64	0.58
5	Recruitment selection	1.60	0.65
6	Description of sample characteristics	1.60	0.58
9	Randomisation of participants	1.39	0.59
8	Sample size	1.37	0.86
20	Conclusion	1.37	0.46
4	Timing between study components	1	0.91
18	Adjusting for follow up time	0.9	0.89
7	Adjusting for participants lost	0.67	0.75
11	Randomisation of participants	0.67	0.75
17	Randomisation concealed	0.29	0.70
16	Control over confounding variables	0.27	0.44

Discussion

Pressure manipulation

Pressure was manipulated via laboratory experiments (*n* = 9), natural experiments (*n* = 9), and field experiments (*n* = 5). Laboratory experiments created an artificial environment enabling high levels of control and manipulation of pressure variables, thus establishing scenarios that would otherwise be difficult to replicate, such as critical surgical operations (Wetzel et al., 2011) or cardiopulmonary resuscitation (Hunziker et al., 2013).

Natural experiments measured the effectiveness of interventions on an individual's ability to cope using naturally occurring pressure variables found within the environment. There was no attempt to manipulate pressure, or include additional pressure variables. For example, Keogh et. al. (2006, p. 340) used GCSE (General Certificate of Secondary Education) examinations due to 'the high importance of these results for employment known to cause mental strain and worry.'

Field experiments attempted to simulate a common performance climate, but also incorporate artificial pressure variables. Artificial pressure variables were additional factors included within the 'B' condition of laboratory experiments and field experiments. These included; financial reward for successful performance (*n* = 5), the publishing of results (*n* = 4), filming the performance task (*n* = 4), performing in the presence of an audience or crowd noise (*n* = 5), random task order whereby participants did not know when they were performing a task (*n* = 1), non-contingent feedback (*n* = 1), punishment-conditioned stimuli (*n* = 1) and only one opportunity to perform the task (*n* = 1).

With regards to pressure manipulation, it is important to ensure that a performance task recreates the characteristics of pressure, such as a meaningful task, incentives for good performance, under constraints such as time, or a single performance opportunity. For example, the use of GCSE examinations as a pressure task (Keogh et al., 2006) could be argued to facilitate results high in ecological validity, however, pressure has a 'subjective component' and only deemed pressure if an individual is aware of the incentives for optimal performance, but also values them (Baumeister and Showers, 1986, p. 373). For example, getting a good grade in an exam may not be an incentive where someone has a job to walk into. According to drive theories (Blascovich, 2008), should a performance situation not generate appraisals of demand or importance, there will not be a pressure response. As some people sit exams with no expectation of passing, or lack desired outcomes for passing, this presents a questionable pressure task for these individuals as they may not perceive pressure. However, it is important to consider the 'successful' use of cognitive reappraisal and how the individual may re-frame the relevance of situation as a function of their 'successful' self-regulation. In this instance it would be advisable to include individuals who require a set grade, and deem this target to be challenging but attainable in order to achieve something worthwhile (e.g., a University place) and does in fact create pressure pre-intervention by piloting the task. This recommended practice was evident in Balk

(2013, p. 413) who incorporated a pilot study to ensure that the pressure task (golf putting) successfully induced a 'classic choking under pressure effect' (subjective arousal, objective arousal, and decline in performance).

To establish that conditions are attained in research settings whereby an individual is performing under pressure, the pressure task should be contextualised. Key personnel from the context where the study is being conducted should inform pressure task development to ensure it attains task meaningfulness, goal valence, and task importance (Baumeister et al., 2007). We argue that the validation of a task in controlled conditions that exposes participants to meaningful pressure, should be the first stage of research seeking to examine the

effects of pressure on performance. Such pressure manipulation data provides a means of establishing if the performance task was meaningful enough to evoke coping efforts.

Where all known characteristics of pressure are included within the performance setting, should participants report experiencing negligible pressure, this does not necessarily indicate an absence of pressure in the experimental condition. Drive theories contend that the demand/resource evaluation process is more unconscious and automatic than conscious and deliberate (Richter et. al., 2016). Therefore, in line with the contention of drive theories (e.g., social facilitation theory; Zajonc, 1965), individuals who have the resources and efficacy to effectively cope with pressure conditions would not perceive/report felt pressure (Blascovich et al., 2000; Seery, 2011). This is not a research failing, as the focus of pressure interventions is to help individuals cope with pressure, via an efficacious use of coping strategies such as reappraisal and resource accumulation (Taylor and Morgan, 2014). However, an alternative explanation for a reported absence of perceived pressure is that the measures used to ascertain perceived pressure may be inadequate to detect subtle changes as discussed below.

Pressure manipulation evaluation

When developing pressure interventions, evaluations of pressure are necessary to help determine if the chosen performance task(s) can help validate intervention effectiveness, and also evaluate the efficacy of interventions. Three studies included a pressure manipulation check to assess participants' subjective experience of pressure. Balk et al. (2013) administered the 7-item 'pressure/ tension' subscale of the Intrinsic Motivation Inventory (obtained by administering questionnaires right before putting in the low- and high-pressure phases) (IMI; Deci and Ryan, 1994). Beauchamp et al. (2012) administered (but did not report data from or reveal when self-report was administered) the Test of Attentional and Interpersonal Style (TAIS) using the 'drive and confidence over time' subscale to establish an individual's ability to perform under pressure. A single-item from the Finnish Athletic Coping Skills Inventory-28 (Liukkonen and Jaakkola, 2003) was utilised by Bjorkstrand and Jern (2013) to assess pressure: 'How nervous were you during the penalty shoot-out?'(recorded only in the pre-intervention condition).

Three studies (Mesagno et al., 2008, 2009; Olusoga et al., 2014) undertook interviews asking participants to self-report the degree of pressure experienced during the focal task. In both Mesagno et al. (2008, 2009) studies participants were screened for their susceptibility to 'choke' under pressure before A-B-A-B experimentation began. Interviews explored the participants perceptions of the intervention and captured detailed accounts of resultant perceptions. Mesagno et al. (2008) was the only paper to exclude participants from further study as they did not experience choking in the 'first pressure' phase. Using self -report methods, Mesagno et al. (2008; 2009) determined whether a psychological intervention would alleviate the likelihood of choking, thus, the researchers perceived it was necessary to purposively recruit choking-susceptible participants (Mesagno et al., 2008; 2009). However, such self-report measures only provide a measure of conscious pressure, as the demand/resource evaluation process is relatively unconscious and automatic, individuals may subconsciously activate coping strategies to manage pressure, and thus not consciously perceive or report these pressure evaluations (Seery, 2011). For such individuals, their self-reported perceptions of pressure may not truly reflect the pressure characteristics of a task. In addressing these limitations, retrospective evaluations of pressure interventions that encourage participants to reflect on pressure and coping may provide an opportunity for researchers to tap into the non-conscious and habitual methods people have for evaluating and coping with pressure. Furthermore, task valence and importance of goal achievement would be appropriate measures to help validate if a task may enhance the perception of pressure (Baumeister et al., 2007; Lane et al., 2016; Lazarus, 1999).

Seventeen studies did not specifically measure the perception of pressure, instead measuring variables argued to be indicative of pressure. Seven studies included psychophysiological measure including; heart rate (n = 6), respiration rate (n = 2), cardiac output (n = 1), cortisol (n = 1), gaze control (n = 1), haemoglobin and

oxygen saturation (*n* = 1), muscle activity (*n* = 1), skin temperature (*n* = 1) and total peripheral resistance (*n* = 1).

Seven studies administered stress Likert scales with five studies administering a bespoke single-item stress Likert following a pressurised task asking, 'How stressed did you feel?'. This highlights interesting findings about how authors may blur the concepts between stress and pressure. Two studies used validated scales namely; Depression Anxiety and Stress Scales (DASS21; Lovibond and Lovibond, 1995), Recovery-Stress Questionnaire (RESTQ-Sport; Kellmann and Kallus, 2001). Fourteen studies measured anxiety using validated psychometric scales, typically the Competitive State Anxiety Inventory- 2 (CSAI-2) (Martens et al., 1990; *n* = 5), the most commonly used measure of anxiety in sport. The cognitive anxiety scale on CSAI-2 has been questioned as a measure of anxiety, with researchers suggesting phrasing anxiety around the term concern assessed task importance rather than anxiety (Lane et. al., 1999). As such, use of the revised version is recommended (Cox et al., 2003). Two of the stress scales (Hunziker et al., 2013; McClernon et al., 2011) and one of the anxiety scales (Wetzel et al., 2011) were completed post-intervention only and intended to test the effects of the pressure task. All other stress and anxiety measures were completed pre- and post-intervention in order to test the effects of an intervention.

A limitation of interpreting high anxiety scores, or psychophysiological measures of high anxiety as indicative of pressure, is that some individuals interpret high anxiety as signal of being ready to perform, and so they will make themselves feel more anxious as part of mental preparation (Hanton et al., 2004; Hanin, 2000; Lane et. al., 2016). As highlighted by the Individual Zone of pptimal Functioning (IZOF; Hanin, 2000) and Survival, Evasion, Resistance, and Extraction (SERE; Wagstaff and Leach, 2015) perspectives, the experience of anxiety and associated physiological responses, can be task facilitative or debilitative. This is dependent on the individual's perception of anxiety, or use of the resultant energy mobilization for different performance tasks. For example, a surgeon experiencing high levels of anxiety is more likely to experience deleterious performance effects due to associated outcomes such as feeling shaky and clumsy (Wetzel et al., 2006). In contrast, a rugby player experiencing high anxiety may benefit from associated increases in cardiac output, effort, masked fatigue and maintained alertness (Robazza and Bortoli, 2007). Intensity and interpretations of anxiety (somatic and cognitive) have also been related to confidence. Specifically, Hanton et al. (2004) reported that under conditions of high self-confidence, increases in anxiety symptoms were reported to lead to positive perceptions of control and of benefit to sports performance.

Ten studies included measures of confidence, including self-confidence scales taken from the Ottawa Mental Skills Assessment Test (OMSAT-3; Durand-Bush et al., 2001) (*n = 1*), Test of Attentional and Interpersonal Style (TAIS; Nideffer, 1976)(*n = 1*), Mental Skills Questionnaire (MSQ; Bull et al., 1996) (*n = 1*) and the CSAI- 2 (Martens et al., 1990) (*n* = 4). Alternatively, the Academic Self-Efficacy Scale (Midgley et al., 2000) or bespoke measures of confidence (e.g., 'how many penalties do you believe you could successfully convert?' Bjorkstrand and Jern, 2013) were used. Beauchamp et al. (2012) did not report confidence results for the TAIS (Nideffer, 1976) and CSAI-2 (Martens et al., 1990). However, four studies identified a post-intervention increase in self-confidence (Breso et al., 2011; Olusoga et al., 2014; Page et al., 2015; Prapavessis et al., 1992; Wood and Wilson, 2012).

It is important to consider the use and type of a control group when planning pressure manipulation evaluations. A control group is argued to help support researchers to contrast performances under pressure of those receiving interventions and those who are not and establish causation (control condition). However, within (*n =6*) studies 'control' groups included general instructional/ educational training (*n = 5)* or intervention at physical support for the pressure task (*n* = 1). The instructional training or physical support may provide participants with enhanced confidence or control of performing a pressure task and therefore undermine the validity of the comparison between the psychological intervention proposed and the control condition. A concern regarding research for performance under pressure is that it is difficult to control for desensitization to pressure as a confounding variable when collecting baseline data (e.g., via practice or familiarization; Wood and Wilson, 2012). Therefore, the simple repeated exposure to a pressure situation might serve as a coping intervention, if the type of situation and/ or pressure is new to the participant. Counterbalancing is one method used to control for such effects. For example, Bjorkstrand and Jern (2013)

recruited participants of a similar demographic to both control and experimental conditions (female football players of a similar age and skill level) allowing differences in performance to be attributed to intervention with greater confidence. However, as noted by Page et al. (2015), such comparison with the control group can be compromised if participants are not screened for confounding variables. In their study, they noted that law enforcement academy cadets may have already been exposed to techniques used in the intervention provided, and this was argued to have diminished group differences. Therefore, it is important to consider the significant differences found in the studies when assessing the validity of the control groups.

Four of the fourteen A-B studies did not incorporate a control group (Beauchamp et al., 2012; Meyers and Schleser, 1980; Olusoga et al., 2014; Prapavessis ET AL., 1992), and explained that this was due to either financial, temporal, or practical constraints (e.g., case study methodology). All seven A-B-A studies included a control group. Both A-B-A-B interventions did not present a control group because of the difficulty in recruiting participants who met the inclusion criteria for the study (Mesagno et al., 2008; 2009). The absence of a control group from study design necessitates caution in interpreting the outcomes of pressure-interventions. This becomes particularly pertinent when participants are aware of the project aims, and may respond differently to measures indicative of pressure. However, the benefits of an A-B-A-B design are that it allows researchers to observe what happens when a treatment is removed, and also what happens when the treatment is introduced a second time.

Effects of coping interventions on performing under pressure

Cognitive-behavioral workshops: The most commonly used intervention, found in eight of the included studies (5 = A-B, 2 = A-B-A, 1 = A-B-A-B), comprised of Cognitive-Behavioral Workshops (CBW). CBW interventions using an A-B design included activities such as developing strategies for acceptance and gaining control (*n* = 2), understanding emotion-performance relationships (*n* = 2), developing problem-focused coping strategies (*n* = 2), confidence - reducing false or self-defeating beliefs (*n* = 2), and enhancing gaze/attentional control (*n* = 1). CBW interventions were delivered by a researcher (*n* = 3), tape (*n* = 1) or video (*n* = 1). Interventions ranged from a single 10-minute educational workshop (Hunziker et al., 2013) to an eight-week coping skills programme (Crocker et al., 1988).

Three A-B CBW studies evidenced significant performance improvements from A to B conditions following intervention, whilst two did not. Two studies measured confidence and found that individuals reporting higher levels of confidence performed better than individuals reporting lower levels of confidence (Bjorkstrand and Jern, 2013; Page et. al. 2015). Four studies measured state anxiety using the CSAI-2 (Martens et al., 1990), of these, three

indicated that interventions intended to reduce the intensity of anxiety symptoms did not influence performance under pressure (Abbott et al., 2009 Crocker et al., 1988; Griffiths et al., 1985). However, as previously noted, reducing anxiety may not necessarily offer performance benefits to participants (Hanton et al., 2004; Robazza and Bortoli, 2007).

Two CBW interventions used an A-B-A design that aimed to educate individuals on cognitive flexibility strategies (Kimura et al., 2015), or control visual attention and beliefs (Wood and Wilson, 2012). In the case of both studies, whilst improvements in performance were found, these were not statistically significant when comparing to those of the control groups. It would be important to identify that the procedures used for control groups expose participants to repeating the pressure task. For example, Wood and Wilson (2012) identified that the intervention and control group both identified a significant increase in perceptions of control and competence. Arguably, the first pressure testing condition may act as an intervention due to a perceived increase in confidence and expectations for perceived chances of success when repeating the pressure test. Mesagno et al. (2009) stated it is virtually impossible to control for pressure desensitization, therefore researchers should take into account significant statistical differences between intervention conditions and control conditions, or the use of qualitative feedback when assessing performance under pressure. Finally, Mesagno et al. (2008) used an A-B-A-B design to deliver a CBW workshop focussed on pre-

performance routines. This intervention aimed to educate individuals on optimal arousal levels, attentional control, and cue words. The experimental design enabled the participants to use their developed performance routine (A) in a pressurized task (B), to be educated on how to refine this skill (A), to then perform again under pressure (B). This intervention was found to significantly improve performance under pressure. However, with no comparisons to a control group it is challenging to establish if the pressure context might have naturally improved participants' perception of pressure and performance or the intervention.

Four of the eight CBW studies identified a significant difference in either perceived (Kimura et al., 2015) or objective (Crocker et al., 1988; Mesagno et al., 2008; Page et al., 2015) performance post intervention. In line with distraction theories (e.g., attentional control theory - ACT; Eysenck et al., 2007) whilst feeling nervous or anxious may produce distracting thoughts and worries (Eysenck and Calvo, 1992), among performers who possess confidence in their ability to control both themselves and the environment, they are more likely to report facilitative interpretations of anxiety (Jones, 1995). Such feelings can prompt compensatory coping efforts that draw upon additional processing resources (e.g., increased effort) or strategies (e.g., seeking social support) that may maintain performance quality, motivation, and effectiveness (Eysenck et al., 2007; Eysenck and Calvo, 1992; Wilson, 2008).

Psychology consultancy sessions: Psychology consultancy sessions were offered as the intervention in six studies (3 = A-B, 3 = A-B-A). A structured cognitive mental skills programme delivered by psychologist (*n* = 4) or therapist (*n* = 2) was provided during consultancy sessions. Largely, interventions were developed to aid performance under pressure within sport contexts (*n* = 4), and delivered on a one-to-one basis (*n* = 4). Two studies delivered mental skills consultancy sessions as a group consultancy intervention package (*n* = 2). Intervention duration ranged from seven sessions over three-weeks (Meyers and Schlesser, 1980) to 12 sessions over six-weeks (Prapavessis et al., 1992).

A-B interventions focused on teaching relaxation techniques (*n* = 3), imagery (*n* = 3), confidence (*n* = 3), thought-stopping (*n* = 2), challenging irrational thoughts (*n* = 2) and developing performance routines (*n* = 2). The two A-B consultancy sessions delivered to participants on an individual basis both produced significant performance improvements following pressure intervention (Meyers and Schleser, 1980; Prapavessis et. al., 1992). The group A-B consultancy intervention found soccer coaches to perceive an increased ability to coach effectively under pressure post intervention (Olusoga et al., 2014). However, without a control group, it is difficult to say that results were solely due to the efficacy of the mental skills programme or coaches may have developed their psychological skills naturally through the process of engaging with their teams, athletes, and colleagues over the time of the intervention.

A-B-A consultancy interventions were structured around a variety of cognitive- behavioral strategies namely; anxiety reappraisal (*n* = 3), problem-focused coping (*n* = 2), self-talk (*n* = 2), re-framing techniques (*n* = 2), attentional focus (*n* = 1) and confidence (*n* = 1). Intervention delivery ranged from once-a-week for ten-weeks (Keogh et al., 2006) to 16 sessions for eight-months (Kerr and Leith, 1993). All three A-B-A interventions identified a significantly improved ability to perform under pressure following intervention.

Of the six consultancy based interventions, three (Breso et al., 2011; Olosuga et al.,2014; Prapavessis et al., 1992) demonstrated post intervention increases in confidence that participants perceived as important in supporting their performance under pressure. Olusoga et al. (2014) and Prapavessis et al. (1992) also reported a significant reduction in symptoms of anxiety and stress. Confidence is a central to the appraisal of pressure, and contributes to the cognitive and somatic response patterns that are either facilitative or debilitative to performance (Blascovich et al., 2003). These findings suggest that the development and implementation of interventions that manage factors argued to disrupt performance (e.g., debilitative anxiety, low confidence) enable individuals to perform at their best (Lazarus, 2000).

Simulation interventions: Five studies (A-B = 3, A-B-A = 2) provided simulation interventions to replicate as closely as possible the experiences of a pressurized task. Three A-B simulation interventions (Beauchamp et al., 2012; Bell et al., 2013; McClernon et al., 2011) incorporated consultancy sessions alongside pressure training delivered by a psychologist. A-B interventions (*n* = 3) ranged from a ten-minute flight simulation session (McClearnon et al., 2011) to a seven-phase multifaceted intervention conducted over three-years

(Beauchamp et al., 2012). The interventions provided participants with educational support on relaxation skills (*n* = 2), attention strategies (*n* = 1), and individual coping strategies (*n* = 1). Participants were asked to apply these skills during simulation. McClernon et al. (2011) delivered interventions on a one-to-one basis, whilst Beauchamp et al. (2012) and Bell et al. (2013) delivered interventions to teams working alongside key individuals that may influence the training environment and effectiveness of the intervention. Both McClernon et al. (2011) and Bell et al. (2013) identified a significant improvement in performance following intervention. Beauchamp et al. (2012) did not present specific performance results, but concluded that the intervention was successful as athletes achieved their performance goals as set by their national governing body.

A-B-A simulation studies (*n* = 2) included a one-day simulated surgical crisis intervention (Wetzel et al., 2011) and a six-week computerized decision making-accuracy programme (Lorains et al., 2013). Both interventions concluded that simulation had significant beneficial effects for improving the speed and effectiveness of decision making under pressure in comparison to the control group. Surgeons within the Wetzel et al. (2011) study also noted that the stress management strategies provided helped them control physiological responses perceived as influencing performance under pressure.

All five simulation interventions enhanced performance under pressure, with three simulation studies including control groups. Whilst simulation interventions incorporated educational support (e.g., Bell et al., 2013; workshops focused on mental preparation principles) the emphasis was on individuals developing, refining, and building a repertoire of coping strategies via application under conditions which simulated the pressurized task (Bouchard et al., 2010). In reviewing the interventions provided, simulation training consistently provided a means of effectively transferring mental skills to the pressure task. However, only Wetzel et al. (2011) included a (bespoke) perceived 'realism' scale to assess the ecological validity of the simulation, and none of the simulation studies evaluated the impact of the intervention on real pressure performance data. Simulation intervention research would benefit from investigating individuals' perceptions of the transferability of coping strategies developed during simulation, to the real pressurized scenarios.

Emotion regulation interventions: Emotion regulation interventions (A-B = 2, A-B-A-B = 1) instructed participants to engage in a distraction (*n* = 2) and/or a reappraisal (*n* = 2) strategy. Interventions were brief 'one-off' interventions intended to aid the performance of a golf putting task (Balk et al., 2013; Moore et al., 2015) or a basketball shooting task (Mesagno et al., 2009). Using an A-B design, Balk et al. (2013) intervention comprised of two self-administered (reading and following the implementation) reappraisal strategies, and one distraction strategy. The reappraisal strategy focused on reinterpreting 'pressure' in a way that is facilitative. This type of strategy was explicitly underpinned by distraction theories that suggest debilitative thoughts and worries impair performance (e.g., process efficiency theory; PET; Eysenck and Calvo, 1992). Consequently, the intervention instructed participants to think about the positive aspects of what they were experiencing to alter its potential impact upon performance. The distraction strategy required the participant to engage in

another neutral thought or taking thoughts or memories in mind that were unrelated to the pressurized task. Moore et al. (2015) provided an A-B intervention arousal reappraisal intended to help participants view pressure-induced emotions as a resource that could aid performance. Reappraisal instructions took '60 seconds to deliver', which would suggest this was researcher-led. The A-B-A-B intervention delivered by a researcher in Mesagno et al. (2009) study was also intended to distract participants from symptoms of somatic anxiety through engaging in a distraction strategy during the pressurised task. There were no significant differences in performance post intervention for Mesagno et al. (2009). Both reappraisal interventions (Balk et al., 2013; Moore et al., 2015) and along with the distraction intervention (Balk et al., 2013) produced significant improvements to performance under pressure. Whilst there is insufficient evidence to conclude that one strategy is more efficacious than the other, it was suggested that reappraisal allows performers to re-evaluate symptoms of anxiety to be facilitative of performance (Moore et al., 2015).

Conclusions

Pressure interventions offered in the included studies most often (*n* = 9) adopted cognitive-behavioral approaches in order to address the appraisal of pressure (e.g., Crocker et al., 1988). Relaxation and re-appraisal techniques (e.g., positive self-talk) were the most commonly used intervention strategies. These were suggested to reduce "unhelpful" aspects of embodied stress responses such as excessive tension and nausea (e.g., Keogh et al., 2006), enable emotion regulation (Olusoga et al., 2014), and divert attention from negative physiological symptoms of anxiety (Page et al., 2015). Distraction theories propose that high-pressure situations cause performance to decrease due to working memory becoming over-loaded with task-irrelevant stimuli. Task irrelevant stimuli, such as worries about consequences, disrupt what was once an automatic skill/performance (Anderson and Gustafsberg, 2016). Evidence suggests that pressure interventions delivered via cognitive-behavioral workshops, individual consultation sessions, emotional regulation strategies, and simulation training may all offer, at least to a small degree performance enhancement by improving an individual's ability to execute self-regulatory processes that support performance under pressure. However, improvements in performance related variables within control groups may suggest that performance related variables improved, but not because of the interventions but the repetitive exposure to the pressure tasks. Some control groups also provided educational or physical interventions that may enhance the perceived confidence or control over performance which may have contributed to an increase in performance within the control conditions.

Simulation studies that exposed individuals to 'pressure' settings produced the most consistent improvements to performance, in comparison to a control group. Researchers concluded that simulation of performance under pressure provides greater opportunity for an individual to demonstrate competence, therefore enhancing an individual's context specific confidence that they can perform the pressure task (e.g., Wetzel et al., 2011). Simulation interventions also provide the opportunity to develop coping skills in a controlled environment, incremented at a pace that encouraged the individual to utilize their coping techniques, develop resilience, and enhance both physical and cognitive functioning (e.g., Bell et al., 2013).

A common theme in reviewing the outcomes of pressure interventions was the influence of appraisals, particularly with regards anxiety and arousal in pressurized performance settings. Researchers commonly reported that individuals who perceived themselves as having the resources and efficacy to cope with pressure conditions were more likely to perceive anxiety as facilitative of performance (Blascovich et al., 2000; Seery, 2011).

This systematic review highlights limitations with the design, execution, and evaluation of pressure interventions. Notably, there is a clear need to better consider the approach used to generate meaningful performance pressures. By identifying pertinent incentives, pressure training can be more effectively contextualized and bespoke to the performance and contextual needs for individuals. As such, it is suggested that future research should better attend to the reliability and ecological validity of the methods used for generating pressure. Specialized samples that require coping skills to facilitate performance under pressure may be particularly pertinent to generate an understanding of the types of meaningful incentives to be incorporated into pressure tasks. However, the opportunity to conduct research with 'hard to reach' groups (e.g., elite athletes) means that researchers are likely to have a small sample size and a control group that maybe affected by confounding variables (e.g., 'lower-skilled' cricket players that may not receive as many hours of training; Bell et al., 2013). Although this may mean that the results should be interpreted with a degree of caution this should not stop researchers from investigating such a unique sample, especially when the investigation focuses on enhancing performance under pressure. Researchers may adopt a phenomenological approach to the study of developing an intervention to aid coping under pressure, especially in light of the fact that pressure is a subjective experience and can be influenced by context. In view of the limitations noted by this systematic review, we suggest that future pressure research should; 1) establish a contextualised task which will generate pressure for participant. Having established a suitable pressure task, research should 2) assess the consequences of pressure by evaluating conscious and non-conscious effects and coping mechanisms, and 3) assess mechanisms through which coping with pressure

might be improved. Future research should seek to address these limitations with greater theoretical emphasis to allow advances in both theory in practice.

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Key points

- Simulation studies that exposed individuals to 'pressure' settings produced the most consistent improvements to performance, in comparison to a control group.
- This systematic review highlights limitations with the design, execution, and evaluation of pressure interventions.
- Future research should attempt to better consider the approach used to generate meaningful performance pressures and assess the consequences of pressure by evaluating conscious and nonconscious effects and coping mechanisms through which coping with pressure might be improved.

CHAPTER FOUR: DEVELOPING AN INTERVENTION TO ENHANCE AN ACADEMY PLAYER'S ABILITY TO PERFORM UNDER PRESSURE

4.0 Introduction

In order to establish the most appropriate design, methodology or impact of coping-pressure research chapter three presented a systematic review of coping interventions. The systematic review synthesised and assessed all available evidence from interventions that were specifically developed to facilitate coping skills for performance under pressure.

The systematic review identified that coping interventions might all offer, at least to a small degree, enhanced performance under pressure (Kent *et al.,* 2018). Across the interventions captured within the systematic review; simulation training (ST) interventions provided the most consistent improvements in the perceived (e.g. self-report) or actual (e.g. performance data) outcomes under pressure conditions (McClernon *et al.,* 2010). Out of the five ST interventions, three simulations were supported by cognitive behavioural workshops (CB) that focussed on mental preparation principles and psychological skills (e.g. mental performance relaxation; Wetzel *et al.,* 2011). The multi-component aspect of such interventions appeared advantageous for individuals. Theoretically, this could be explained by ST inducing psychological and physiological responses indicative of pressure thus providing opportunity to rehearse coping. CB workshops also provided individuals with

different types of coping strategies and resources they may utilise for the benefit of performing under pressure.

Making specific recommendations for an action, goes beyond a systematic review and requires additional contextual information and informed judgements that are typically the domain of the researcher (Mallet *et al.*, 2012). Subsequently, this chapter builds on the systematic review by presenting a review of ST and CB literature, particularly the implications for application within pressure contexts and adolescent populations. Following this, a rationale for the format and content of both CB workshops and ST will be presented.

4.1 Cognitive behavioural workshops

Cognitive behavioural (CB) workshops are the most commonly applied coping intervention to develop performance under pressure (Kent *et al.*, 2018). The core objectives of CB workshops are underpinned by a cognitive-behavioural philosophy. A CB philosophy aims to teach clients to recognise, evaluate and respond to their thoughts and beliefs to subsequently manage behaviour and emotions which influence performance (Algaze, 1995).

Within the domain of sport, CB interventions have been identified to help individuals acquire transferable coping skills to potentially aid in managing pressure moments. Attentional control theory (ACT) (Eysenck *et al.*, 2007) contends that performance under pressure may deteriorate as a result of negative thoughts which impact effective attentional control that is required to effectively complete a task. However, for some individual's anxiety may also serve as a facilitative effect upon performance whereby the concern to perform optimally serves a motivational function (Eysenck *et al.*, 2007). Subsequently, Keogh *et al.* (2006) CB intervention utilised ACT by provided adolescents with strategies to manage exam pressure particularly the awareness of dysfunctional cognitions, the negative impact and the 'usefulness' of cognitions on task memory. The CB intervention resulted in the change of dysfunctional beliefs and cognitions to become more functional and less distorted and

enhanced examination performance. However, it is important to recognise that such CB strategies that alter emotion such as anxiety might not drive performance within certain tasks, but rather provide contextual information on the situation that can be beneficial (e.g. optimum zone of performance) (Nesse and Ellsworth, 2009). Subsequently, for CB workshops to be of most benefit it is important to understand the nature of the context and performance task to recognise the most adaptive cognitions and its relationship with emotion.

4.1.1. Contextualising Workshops Content

With the CB interventions identified within the systematic review interventions that did not aim to establish contextual or specific environmental demands in relation to the pressure tasks did not identify differences in performance following the intervention. For example, Kimura *et al.'s* (2015) aim was to facilitate dysfunctional thinking patterns but had no consideration for the nature of the context and performance task within their CB workshops. When working within a cognitive-behavioural framework a core component that is believed to facilitate intervention effectiveness is establishing the individual or team needs; which will then aid the formulation of the intervention (Anderson, 2000). For instance, within Crocker, Alderman and Smith (1988) prior to the intervention design authors reflected upon the specific environmental and cognitive demands of the pressurized volleyball task. Authors also collated preparatory information and the promotion of the inter-personal and intra-personal factors that assist coping under pressure to incorporate such factors within their CB workshops.

The implication for this within the development of a CB intervention for academy soccer players would be to identify the contextual factors within an academy environment that may protect or debilitate performance under pressure across age-groups (Mills *et al.*, 2013). CB workshops can then be tailored more specifically to the demographic needs of

academy soccer players. Alongside identification of the perceived needs of academy players CB frameworks suggest that speaking to significant others such as coaches and parents, who may be able to offer an additional perspective from the observations of players (Puig and Pummell, 2012). By doing so, the researcher is also able to gain and in-depth understanding into the intra-personal and inter-personal factors to facilitate within CB workshops.

4.2 Simulation Training

Simulation training (ST) is an intervention in which requires the individual to practice under conditions that replicate the incentives that are likely to induce pressure within their performance (McClernon *et al.,* 2010). ST can make it possible to rehearse and assess the complex set of competencies required in an authentic environment which corresponds closely to the conditions of actual practice (Kneebone *et al.,* 2010). Research examining ST has identified that engagement within ST can enhance individuals' ability to cope with performance anxiety that may distract from primary task execution and learn to increase on-task effort to improve performance under pressure (Eysenck and Calvo, 1992). ST can be passive by virtual reality or using video clips (e.g., Lorains *et al.,* 2013) or active where the pressure moment is physically recreated and the provision of 'in-situ' simulations within a true clinical or performance context (e.g. Bell *et al.,* 2013). Active ST is particularly advantageous in breaking down the conceptual wall between simulation and real-world practice, replacing it with a permeable membrane which allows learners to link simulation-based training with actual practice (Kneebone *et al.*, 2010).

In the case study of elite world cup rugby winners, Hodge and Smith (2014) identified that the design of simulation can moderate the effectiveness of controlling the emotional responses to pressure, enhance decision-making and develop broader coping strategies. Subsequently, to enhance the transfer of coping skills learnt within training, the elite rugby

coaches' within Hodge and Smith (2014) case study emphasized the importance of identifying the contextually specific decision-making demands that induce pressure unique to their team performance prior to simulation training sessions. However, despite the importance of developing contextualized ST (e.g. Fletcher and Sarkar, 2016), the broad review of research evidenced the lack of contextualized pressure interventions within literature that may have influenced intervention effectiveness. Establishing the incentives that induce pressure within elite academy soccer players will be essential to generating meaningful pressure for the ST.

4.2.1 Pressure Manipulation in Simulation Interventions

Meaningful incentives to perform optimally must be present within ST for pressure to be present (Baumeister and Showers, 1986). Rather, a common finding within pressure research is the attempt to replicate the pressure scenario rather than replicating the makeup of the various situational and personal incentives that may induce pressure within the task. For example, Wetzel *et al.* (2011) replicated a simulated operation, however within a 'real' surgical task pressure maybe appraised due to perceived job loss or the patient's life (consequence), medical students watching (presence of an audience) or financial gain (rewards). Such incentives were not present within Wetzel *et al*. (2011) simulation. ST that does not include meaningful incentives would arguably not manifest the psychological or physiological responses indicative of pressure, and the respondent opportunity to rehearse coping efforts; thus, the effectiveness of the simulation is undermined.

Oudejans and Pijper (2010) state the difficulty in creating and replicating individualized 'context specific' pressure within training, for example; the difficulty of mobilizing the types of consequences found in competition, such as thousands of pounds of prize money. However, ST can still incorporate pressure present to individuals within situations representative of what they experience in competition, such as chasing or

defending a score. By understanding the range of meaningful situational and personal incentives within a given context you are better informed to generate a simulation intervention that is able to replicate similar psychological and physiological responses that are indicative of pressure (Blascovich *et al.,* 2008). For instance, Bell *et al.* (2013) advocated that this could be achieved through punishment-conditioned stimuli and perceived threat. The exposure to threat is what underpins such simulation by attempting to replicate the aversive emotional and motivational states that can impact upon the speed of processing and storage capacity of the working memory, which subsequently impacts performance (Eysenck and Calvo, 1992). In order to generate meaningful threat, authors discussed how the intervention could be further developed by developing a broad range of cricket specific pressure scenarios. Aligned with this suggestion, Stoker *et al.* (2016) study established that coaches' manipulated a variety of incentives to induce pressure because athletes respond differently and that what generated pressure for one athlete may not for another. However, the opportunity to conduct research with 'hard to reach' groups such elite academy soccer players may underpin why there is a lack of systematic identification of how to induce meaningful pressure within different sporting contexts. There is a clear need to better consider the approach used to generate meaningful performance pressures and how individual's evaluations of pressure are necessary to help determine if the chosen performance task(s). By identifying pertinent incentives, pressure training can be more effectively contextualized and bespoke to the performance and contextual needs for individuals. Moreover, ST within an academy soccer context may provide the opportunity to develop coping skills in a controlled environment, and to be incremented at a pace that is suited to the developmental age of the player.

To help validate intervention effectiveness future research should attend to not only the reliability and ecological validity of the methods used for generating pressure but also evaluations of pressure. For example, Balk *et al*. (2013) administered the 7-item 'pressure/

tension' subscale of the Intrinsic Motivation Inventory (obtained by administering questionnaires right before putting in the low- and high-pressure phases) (IMI; Deci and Ryan, 1994). Although self-report measures only provide a measure of conscious pressure, they are central to validate of the task is of perceived importance to induce a pressure response.

4.2.2 Environmental Support

Aligned with the research of Fletcher and Sarkar (2012) there is also a key importance of developing a supportive environment when conducting ST interventions. Developing a supportive environment is important not only in terms of providing individuals with the required support but to secure "buy-in" from the key stakeholders to prepare the environment (Bell *et al.,* 2013). Within Bell *et al.* (2013) study authors highlighted the importance of transformational leadership, which was beneficial in terms of facilitating coping skills but also generating pressure as a result of the perceived importance that key stakeholders placed upon the cricketer's execution of the task.

Within academy soccer, players often report having to adapt to the demands and expectations of the coaching staff in order to make progression and 'survive'. (Finn and McKenna, 2010). Subsequently, the perceived importance key stakeholders place upon the players performance within ST can be influential on the meaning players may then attribute to the task. For instance, Mesagno *et al.* (2016) indicated that the presence of key influencers evaluating the performance of a task can evoke self-presentation concerns. Self-presentation is likely to influence the perception of pressure process in which individuals may monitor and control their performance due to how they are perceived and evaluated by others (Mesagno and Beckmann, 2017). Subsequently, the importance of ensuring a ST intervention is fully

supported by the staff, management, and coaching team can influence the perceived importance that players may attribute towards task performance.

4.3 Intervention Design

4.3.1 Control Groups

Including a control condition in an intervention study permits research to primarily address the question: "Does treatment X (independent variable e.g. simulation training, cognitive behavioral workshops) affect condition Y (the dependent variable; performance under pressure) beyond how the individual would usually perform under pressure. Implementation of a control group assists determining whether the effects of a pressure intervention exceed the effects of "nonspecific factors" (e.g. therapeutic relationship, patient characteristics (Craig *et al.,* 2008). Within the data quality review of the systematic review pressure studies underperformed on attempting to control or consider the control of potentially confounding variables, such as the unique interplay of intra and inter-personal variables (Fisher and Zwart, 1982).

The 'nonrandom' allocation of participants to the control and experimental groups or challenging in matching participant characteristics can also undermine the validity of examining intervention effectiveness. For example, within Bell *et al.* (2013) study on elite cricketers the authors age-matched participants, but there was a significant difference in skill level of the experimental and control group. Counterbalancing is one method that could control for such effects. For example, Bjorkstrand and Jern (2013) recruited participants of a similar demographic to both control and experimental conditions which may ascertain that changes in performance under pressure are a result of the development of effective coping skills rather than by participant variables.

Within an elite academy soccer, demographics for players will be closely aligned e.g. age and skill ability (e.g., not amateur vs elite). However, a control group can be challenging due to the perceived advantages some players may gain in receiving the intervention and the temporal nature of contracts (e.g., decisions for contractual selection at Christmas). To overcome this, following the delivery of an intervention the researcher can administer the intervention to control groups if there was perceived benefit.

4.3.2 Experimental Design

Within intervention research the experimental design is an important consideration which can impact upon the rigor and confidence to which one can validate cause, effect and potentially retention effects (Fraser and Galinsky, 2010). An A-B-A or A-B-A-B experimental design is argued to be the gold standard in allowing researchers within difficult applied settings to evaluate intervention effectiveness. The A-B-A design is advantageous for allowing the researcher to assess change within individuals with their own unique characteristics, responds to the intervention (Fraser and Galinsky, 2010). If the performance reverts to the baseline following the withdrawal of treatment than there is evidence that the intervention had a no effect upon the individual (Fraser and Galinsky, 2010). However, a limitation with this experimental design is the repetition of the pressure task which may have served as a form of a ST. Moreover, in the design of a pressure intervention it will be important to consider significant statistical differences between intervention conditions and control conditions or support performance statistics with the use of qualitative feedback when assessing performance under pressure. The use of qualitative feedback can provide the researcher with a better understanding to any change in the individuals appraisal of pressure and coping strategies as a result of the intervention.

4.4 Implications for Evaluation

Studies incorporated a mixture of performance statistics and inventory scales to evaluate change as a result of the coping intervention. There is no one-single measure that can be used to effectively evaluate the relationship between intervention effectiveness, rather a combination of measures is needed to truly capture intervention effects on performance. This section will discuss self-report measures and global performance measures and the implications for evaluating the effectiveness of a future coping under pressure intervention.

4.4.1 Self-Reporting Performance

Authors used subscales of anxiety (e.g. CSAI-2) and perceived stress to evaluate coping with pressure. A key point that was evident within the systematic review was the use of change in anxiety to indicate that performance under pressure could improve. For instance, Breso *et al.* (2011) study aimed to decrease cognitive-anxiety in an attempt to increase student's ability to perform under pressure within their school exams. The authors aligned with processing efficiency theory (Eysenck and Calvo, 1992) whereby when students experience negative thoughts and anxiety with regards their capabilities, these negative affective reactions can themselves further lower perceptions of capability and subsequently underperform when perceiving the task as pressure. Therefore, they perceived capturing a change in cognitive-anxiety would correlate to an improvement in performance under pressure. However, elevated cognitive anxiety is not indicative of a decrement to performance (Cohen, Pargman, and Tenenbaum, 2003). Negative emotions such as anxiety can boost somatic symptoms (e.g., heart rate) and influence effort mobilisation due to their informational impact on subjective demand during performance.

A useful methodological process that would overcome the limitations of quantitatively assessing symptoms of anxiety would be to capture appraisals, particularly with regards anxiety and arousal in pressurized performance settings. Researchers commonly reported that individuals who perceived themselves as having the resources and efficacy to

cope with pressure conditions were more likely to perceive anxiety as facilitative. Moreover, the use of interviews within Mesagno *et al*. (2008) study was an effective method to explore the participants perceptions of intervention effectiveness which can also serve as a form of reflective practice.

Reflective practice would encourage participants to reflect on pressure and coping which may also provide an opportunity for researchers to tap into the non-conscious and habitual methods the individual may have for evaluating and coping with pressure. Retrospective evaluations of pressure in the form of reflective practice may also serve as a method to correct future actions. Moreover, it is important to consider reflective practice as a useful pressure manipulation check but also serve as an additional component to the multi-component pressure intervention.

4.4.2 Performance Statistics

Due to the difficulty in providing quantitative measurements of performance within domains that have no objective assessment method of success, such as aviation a useful methodology was gaining expert evaluation. For example, within McClernon *et al.* (2010) study the expert aviation pilots evaluated participants performance five times during the transfer task (during every other turn-to-heading assignment). Marking performance on expert judgement would be a useful strategy within academy soccer's whereby players performance can often be based upon decision-making and execution of skill.

Objective methods of assessment such as the use of global performance outcomes may not always be appropriate within certain performance tasks that incorporate both decision-making and skill execution. Global performance scores (e.g., number of runs scored; Bell *et al.,* 2013) may not potentially account for the factors that may diminish when an individual is not performing under pressure. For example, under pressure, cognitive control can be disrupted and fracture the automaticity of skilled performance and causing

performance quality such as executing shots, passes, tackles to decline (Masters, 1992). In contrast, the concern to perform optimally can serve as motivational function via a self-regulatory control system that increase the allocation of additional processing resources resulting in decisions that were more effective than if he was not under pressure (Wilson, 2008). The coach would be aware of the players expected performance in a given task, subsequently using a subjective measure of performance would sit more comfortably with pressure theory.

4.5 Conclusion

This chapter presented the key findings of the systematic review and the key implications in which will influence the design, methodology and content of the coping-pressure intervention.

A multi-component design which incorporates CB workshops and ST was advocated to be the most effective form of intervention. A pre-requisite for the design of the ST is understanding contextual pressure and establishing a method of inducing meaningful pressure. Similarly, to ensure that the ST is perceived to be meaningful by players it is important to have developed a 'buy-in' with the key stakeholders and established a methodology of capturing pressure evaluations post-testing.

CB workshops also need to be contextually aligned with the needs of individuals to facilitate interventions that are likely to be transferable to the individuals pressure context. Underpinned by the CB philosophy it is important to ensure a rigorous understanding of the environment and the factors that may protect or debilitate performance under pressure.

The repeated exposure to a pressure task that is deemed to be meaningful to an individual is fundamentally ST. Moreover, the experimental design when testing intervention effectiveness will be examining if performance under pressure differentiates between players

receiving ST or both the ST and CB. This will ensure higher levels of efficacy within the analysis. To evaluate intervention effectiveness using experts within the pressure environment is an effective way to assess decision-making and skill execution which accumulates to an effective performance. Performance change should also be monitored by an individual's process of appraisal and reflecting with the individual the impact of the intervention on their ability to consciously manage or cope with pressure.

Aligned with the implications from this chapter, chapter five will address a key pre-requisite for the development of simulation training by establishing the incentives that induce pressure within elite academy soccer. Chapter five will also aim to establish the factors that protect or debilitate performance under pressure, so they can be imbedded within the CB workshops. Using an interview methodology players, parents and coaches' will be reflecting upon their past pressure experiences, this will also serve as a method for illuminating the importance of helping players developing coping skills under pressure and facilitate 'buy-in'.

CHAPTER FIVE: A CASE STUDY OF THE PERCEIVED PRESSURES IN AGE GROUP PROFESSIONAL SOCCER

5.0: Contextualising Pressure Interventions

The systematic review presented in Chapter three identified the importance of contextualising pressure interventions. Particularly, a key emphasis was on the identification of pressure inducing incentives for performance and the contextual factors within an academy environment that may protect or debilitate performance under pressure across age-groups. Identification of such factors will enable pressure interventions to be tailored more specifically to the demographic needs of academy soccer players.

5.0.1: Qualitative Approaches

A number of studies within pressure research has have used quantitative methods, which is reflected in the systematic review. While studies using quantitative methods have been important to the field, these studies have limitations when investigating individuals' appraisal of pressure. Less is known about the subjective state experienced by athletes while performing under pressure (Swann *et al.,* 2017). Consequently, a qualitative method of research will be utilised to detail the experiences of pressure of elite academy soccer players (Swann et al., 2017).

5.1: Age Group Academy Soccer

The pathway to professional soccer for male youth academy players is considered to be highly pressurised with less than 1% of players offered professional contracts (Listea *et al.,* 2017). Therefore, research to help youth academy soccer players cope with pressure is

warranted. Baumeister (1984, p. 362) defined pressure as "the presence of an incentive or number of incentives that increase the importance for optimal, maximal, or superior performance."

Simulation training which strategically exposes individuals to meaningful pressure can provide improvements to performance under pressure by facilitating the development of coping skills (Kent *et al.,* 2018). Developing coping skills may aid the ability of academy soccer players to withstand, or even thrive on pressure experienced during matches and training (Sarkar and Fletcher, 2014). Essential to the effectiveness of simulation interventions is exposure to meaningful pressure which should elicit intense emotions, or action to regulate the emotions. If a simulation task is not of importance to an individual, then an individual may not experience pressure, and the opportunity to rehearse coping efforts under pressure conditions is lost; thus, the effectiveness of the simulation is undermined (Baumeister, Vohs, and Tice, 2007).

Incentives to perform optimally under pressure can be organised under two themes; 'situational incentives' which are external incentives that influence the perceived importance of performing optimally (Gardner, 2012), and 'personal incentives' which describe intrinsic contribution to the manifestation of incentives to performing optimally (Mesagno and Beckmann, 2017). Situational incentives include; the presence of competition, the presence of an audience, tangible rewards, no likelihood for a second chance, and time (Baumeister, 1984; Essl and Jaussi, 2017). Personal incentives include self-orientated standards and public self-consciousness (perceived expectations of others, real or imagined). However, due to the contextual specificity and individual influences of pressure the findings of this work are not easily transferable across populations (Fletcher and Sarkar, 2016). A pre-requisite for any simulation intervention should be to identify pertinent situational and personal incentives that generates meaningful performance pressure in the context of interest, in this instance

academy soccer by age-group (Kent *et al.,* 2018). Therefore, the first aim of the present case study was to identify meaningful incentives that induce pressure within academy soccer, so they could be simulated or present in future pressure interventions.

In the context of academy soccer, age is a factor which may contribute to an individual's appraisal of pressure (Reeves, Nicholls, and McKenna, 2009). Players enter the soccer academy system during early adolescence (11 years), and subject to performance, may progress through the academy system until late adolescence (18 years). Stage of adolescence can influence an individuals' thoughts, behaviour and perception of themselves and their environment (Weir and Jose, 2013). Subsequently, age would be an important consideration when designing a pressure intervention (Compas *et al.,* 2001). Therefore, the present study sought to explore and contrast incentives that induce pressure across different age groups.

Pressure exposure is a core component in developing an ability to perform under pressure (McClernon *et al.,* 2011). However, as well as pressure exposure, simulation training programmes are also contingent on providing trainees with resources so that they perceive themselves prepared for a given pressure situation (Lazarus 1999; McClernon *et al.,* 2011). Developing contextually relevant psychological skills and processes may enhance the use of protective interpersonal and intrapersonal coping resources, which facilitates coping under pressure (Fletcher and Sarkar, 2012; Frydenberg, 2004). Therefore, a second aim of the present study was to identify psychological factors protective and debilitative of players performance under pressure. Identification of protective factors may help inform coaches and practitioners of the qualities to promote within the players' development. Whereas, the identification of debilitative factors may assist in structuring environmental conditions, and/or helping players develop strategies intended to manage debilitative factors (Rumbold, Fletcher and Daniels 2012).

Fletcher and Sarkar's (2012) psychological resilience model describes psychological factors that enable elite performers to withstand pressure during their sporting careers. The factors purported to support optimal sport performance under pressure include personality, motivation, confidence, focus, social support, meta-cognitive and challenge appraisal. Whilst Fletcher and Sarkar's (2012) model only identifies protective factors, the notion that these factors have the potential for a debilitative influence on sport performance is accepted. Fletcher and Sarkar's (2012) model offers a 'useful architecture' to assist in establishing psychological factors protective and debilitative to performance under pressure within academy soccer.

To enable an in-depth examination of the pressure experience within the soccer culture Puig and Pummell (2012) recommend incorporating the perspective of significant others. In the context of the present study, involving academy staff and parents presents alternative perspectives that may add further insight into player's observations. Coaches, sport scientists, education officers and parents were all interviewed to ascertain their perception of soccer academy pressure, and factors that may protect or debilitate performance under pressure.

The aims of the present study were to: (1) establish by age group, incentives that induce pressure as perceived by academy soccer players, player parents, coaches, and support staff; (2) identify and explore psychological factors protective and debilitative for optimal or superior performance under pressure.

5.2 Method

5.2.1 Research Context

The study was undertaken within a male Premier League, category one soccer club (24 soccer clubs out of 84 within the UK have achieved this status). A case study approach offered a structured way to disseminate 'real life' experiences to identify pressure

conditioned stimuli and factors that may be protective or debilitative of performance under pressure across academy age-groups (Keegan *et al.,* 2017).

5.2.2. Interview Guide Development

The notion of rigor is often viewed as a necessary marker of research quality (Smith and McGannon, 2018). To ensure intellectual precision, robustness and appropriateness of the interview guide a pilot interview was conducted to provide the interviewer with an opportunity to practice conducting interviews on this topic and also assess the appropriateness of the questions contained within the interview guide. Aligned with the suggestions of Smith and McGannon (2018) the researcher and pilot participant took part in 'member reflections'. Together the researcher and pilot participant engaged in reflections to explore any gaps or concerns they share concerning interpretations of the interview guide. The interview guide was modified by simplifying language used. As an illustrative example, is of the question:

'What degree of importance do you give to being able to perform under pressure?' was amended to 'How important do you think it is to be able to perform under pressure?'

5.2.2.1 Enhancing Trustworthiness with Interviews

The first author had provided psychological support services (e.g., one to one sessions, workshops) to academy players, parents, and coaches at the soccer academy for one year prior to the initiation of this study. These experiences helped construct a deeper understanding of the academy culture and terminology, which enabled interviews to progress using a more conversational tone (Rubin and Rubin, 2011). However, one implication of this familiarity is how the researcher's assumptions and values may transmit into the interpretation of the meanings, experiences of players' discourses during the research process (Smith, 2010). Tracy (2010) suggests that qualitative excellence may be achieved through a variety of craft skills that are flexible depending on the goals of the study and

preferences/skills of the researcher. In the present study the researcher sought to enhance trustworthiness by engaging in a process of self-reflexivity that required the assessment of biases and motivations in a vulnerable, honest and transparent manor.

Self-reflexive practices included field notes on the perceived influence and perception of simulation training, reflective practice and CB workshops upon on 'the scene' (soccer academy) and noting others' (coaches', players and parents). They also include reflections of being a female competitive athlete in a male dominated environment. An informal "audit trail" of research decisions and activities throughout the research process was created within a notebook that was available to the researcher when developing the interview guide and pressure intervention, and in analysing data. Reflective findings were then formally detailed in the researcher reflections (chapter eight) and also in the discussion of qualitative findings in both chapter 6 and 7.

Aligned with the nature of this study it is also important to consider the rightness or wrongness of actions as qualitative researchers in relation to the people whose lives we are studying. As a method of procedural ethics, the researcher should always respect others, which includes how researchers leave the scene and share the results. Participants (players, parents and coaches) were informed that their data would be used to guide the development of a pressure intervention and not as a means to assess performance.

5.2.3 Participants

Purposeful sampling was used for the identification and selection of information-rich cases related to the phenomenon of interest, in this instance the perceived pressures in maintaining an academy soccer lifestyle and associated demands (Palinkas *et al.*, 2013). The Premier League delivers a development system across three phases of adolescence: Foundation (11-12 years), Youth Development (13- 16 years), and Professional Development (17-18 years) (FA,

2017). As players may discuss aspects of their development with coaches, support staff, and parents (Morris, Tod, and Oliver 2015) these key influencers were also interviewed.

5.2.3.1 Academy Players

Thirty-two male academy players participated in one of eight focus groups, with participants grouped according to age category (see Table 3)**.** In line with the recommendations of Stoker *et al.* (2016), players were purposively selected to interview on the basis that they perceived different experiences of pressure. The aim of the focus groups were to elicit the perceptions, feelings, attitudes, and ideas of players about performance pressure. An adolescent's time is spent within the context of a group; as such, the group setting represents a familiar and reassuring environment (Lewis, 1992). Lewis (1992) also claims that a focus group can generate a greater range of responses than individual interviews particularly for adolescents by removing the one-to-one adult-adolescent relationship. To support this objective, all academy players completed the five-item pressure/tension subscale from the Intrinsic Motivation Inventory (IMI; Deci and Ryan 1994), and item responses were averaged to provide one pressure/tension score. This inventory has been previously used in this way to evaluate perceived pressure (e.g., Balk *et al.*, 2013). The two highest (score > 6) and two lowest (score < 2) scoring players from each age category were selected to participate in focus groups. Experience of academy soccer among focus group participants ranged from six-months to ten years (M = 6.34 years, SD = 8.87).

Table 3: Demographics of academy players selected for interview

Focus Group	Age Range	Number of players in each category	Years of experience	IMI pressure score (High)	IMI pressure score (Low)	Contract type
1	11-12	Age 11= 4 Age 12 = 4	*M=3.82* SD=1.27	Defenders (*n= 1)* Midfielders (*n=2)* Strikers (*n=1*)	Defenders (*n= 2)* Midfielders (*n=1)* Strikers (*n=1*)	Part-time (*n =3*) Full-time (*n=5*)
2	13-14	Age 13= 4 Age 14 = 4	*M= 3.75* *SD= 2.48*	Defenders (*n= 3)* Midfielders (*n=1)*	Defenders (*n= 1)* Midfielders (*n=2)* Strikers (*n=1*)	Part- time (*n= 2)* Full-time (*n =6)*
3	15-16	Age 15= 4 Age 16= 4	M= 4.02 SD= 2.86	Goalkeeper (*n =1*) Defenders (*n =1*) Midfielders (*n* =2)	Defenders (*n= 1)* Midfielders (*n=2)* Strikers (*n=1*)	Part- time (*n= 2)* Full-time (*n =6)*
4	17-18	Age 17 = 4 Age 18= 4	M= 6.25 SD= 3.14	Goalkeeper (*n =1*) Defenders (*n =1*) Midfielders (*n* =2)	Defenders (*n= 1)* Midfielders (*n=3)*	Full-time (*n =8)*

5.2.3.2 Academy Staff

Fourteen academy staff were individually interviewed (see Table 2) including; male lead coaches (n = 7), male support coaches (n = 3), male sport scientists (n = 2), and education and welfare officers (n = 2, one male, one female). Staff experience within an academy soccer context ranged from to 1.5 to 14 years (M = 7.75 years, SD = 4.41 years).

Experience as a player in professional soccer ranged from none to 15 years (M = 3.8 years, SD = 6.41).

Table 4. Demographics of academy staff selected for interview

Age-Group	Staff	Years of playing experience in professional soccer	Years coaching/ supporting within academy soccer
11-12	Coach A	None	8
	Coach B	None	1.5
13-18	Goal Keeper Coach A	None	5
13-14	Coach A	None	8
	Coach B	None	5
15-16	Coach A	None	15
	Coach B	9	10
16-23	Goal Keeper Coach B	None	10
17-23	Coach A	14	7
	Coach B	20	14
11-16	Education and Welfare officer A	None	2
16-23	Education and Welfare Officer B	None	15
11-16	Sport Scientist A	None	3

16-23	Sport Scientist B	10	5

5.2.3.3 Parents of Academy Players

All parents of academy players were invited to take part in a focus group exploring perceptions of their child's experiences of academy football and pressure. Of those volunteering (n = 26) a purposeful sampling strategy was utilised to ensure representation for each age group, and full and part-time academy programmes. This resulted in the recruitment of 16 parents (mothers; n = *7*; fathers; n = 9) for three age group focus groups; 11-12 (n = 5), 13-14 (n = 5) and 15-16 (n = 6). This comprised parents of nine players on the full-time programme, and seven players on the part-time programme. Parents from the 17-18 age group were not included as most of these players lived away from home (e.g., international players, parents living more than two-hours away from the academy).

5.3 Data Collection Procedure

Approval for this project was granted by the lead authors' University ethics committee. Parents were informed about the aims of the present study and offered consent for their child's involvement. Following favourable ethical review, and confirmation of informed consent to participate (parental consent where appropriate), focus groups were undertaken with players and parents which enabled participants to reflect on and discuss differing or similar experiences and perspectives (Côté-Arsenault and Morrison-Beedy, 2005). Individual interviews were completed with coaches and support staff following the same semi-structured interview guide used to support the focus groups. Individual interviews, rather than focus groups, were undertaken with academy staff due to the varied roles and experience of working within academy soccer.

All interviews were completed in a quiet office at the academy training ground. Players, coaches' and support staff interviews took place during the morning training hours of

the academy. Parents' interviews took place during the evening hours when they dropped their son off for evening training. All focus group interviews were video recorded to account for identification, players/parent body language, any over-speaking or individuals dominating conversations (Jewitt, 2012). Interviews ranged in duration from 23 to 50 minutes. Following the end of interviews all participants were de-briefed of their ethical rights to withdraw from the study at any stage without consequences.

Within a high-performance sporting environment, participants may have concerns about disclosing negative experiences of pressure for fear of undesired consequences. To reassure participants of anonymity, pseudonyms were used in reporting data and illustrative extracts were used from across the participant pool. Interviews were transcribed verbatim with participants receiving a copy of their transcript to add, amend, or omit their comments as deemed necessary to accurately reflect their perceptions and experiences (Miles, Neil, and Barker, 2016). This procedure was made known to participants in advance of interview, and following interviews to reduce worry, establish trust, and support participants in speaking freely during interview (McCabe and Holmes, 2009). One player made an addition to his transcript to include the pressure of 'social media', whilst one parent chose to omit some information disclosed during interview.

5.4 Data Analysis

Data from focus groups and interviews were pooled for analysis. Thematic analysis was the chosen qualitative methodology as it is not strictly theoretically bounded. Thus, it is adaptable and flexible allowing the researchers to utilise a deductive and constructionist position (Clarke and Braun, 2013). The coding process was deductive in the sense that it was guided by Baumeister's (1984) definition of pressure for pressure inducing incentives, and Fletcher and Sarkar's (2012) psychological resilience model for psychological factors of influence. The coding process was also constructionist as we did not seek to focus on

individual ideologies, but instead sought to theorise the socio-cultural context of academy soccer (Braun and Clarke, 2012).

Braun and Clarke's (2006) method of thematic analysis was used to identify, organise, evaluate, and report patterns within the data. This followed a six-step approach; 1) Familiarisation: The interview transcripts were read and re-read by the first author to ensure clarity and understanding of participants meaning. 2) Generating the initial codes: This phase involved the production of initial codes from the data linked by a common theme or idea and refer to the most basic segment, or element, of the raw data (e.g. coach expectations). 3) Searching for themes: the work of Baumeister (1984) and Sarkar and Fletcher (2012) were used to deductively identify themes respectively regarding pressure inducing incentives and psychological factors protective or debilitate of performance under pressure. Special consideration was given to any data not captured by these deductive themes, with the situational incentive 'performance lifestyle' resulting from this inductive process. This was challenging to generate such a new theme, but following a review with the researchers' critical friend it was certain that the 'performance lifestyle' was justified as an inductive theme. 4) Reviewing themes: This phase involved refining and reviewing themes to ensure identifiable distinctions between themes, and that sub-themes were appropriately condensed. 5) Defining and naming themes: To challenge the construction of codes and themes a 'critical friend' was introduced. This critical friend, in this instance a project supervisor, enabled a process of critical dialogue to take place regarding theme construction (Smith and McGannon, 2018). 5) Writing the report: The last step in thematic analysis involved selecting illustrative quotes the authors considered as best reflecting each theme.

5.4.1 Trustworthiness and Rigor of Data Analysis

Thorne (2000) characterised data analysis as the most complex phase of qualitative research. While thematic analysis is flexible, this flexibility can lead to inconsistencies and a

lack of coherence when developing themes from research data (Holloway and Todres, 2003). Although the thematic analysis procedure utilised, as documented by Braun and Clarke (2006), is presented as a linear six-phased method, it is actually an iterative and reflective process that develops over time and involves a constant moving back and forth between phases.

Researchers should evidence their due diligence, exercising appropriate time, effort, care, and thoroughness to the trustworthiness and rigour of qualitative data analysis (Tracy, 2010). As Braun and Clarke (2013) noted, researchers cannot simply represent experience. Understanding and representing peoples' experiences requires 'interpretive activity; this is always informed by our own assumptions, values and commitments' (p. 285). Therefore, data analysis drew upon recommendations of both Smith and McGannon (2018) and Tracy (2010) who critically present universal markers of quality and a variety of craft skills that researchers may apply to enhance trustworthiness. First, rigour was demonstrated in the data analysis procedures through ensuring that interviews were transcribed within one week of interview. This enhances trustworthiness by ensuring there was no memory decay of any body language that was used to emphasise on particular points by the participants. Additionally, it provided participants the opportunity to look over their transcripts (member-checking) prior to the analysis of the data within a time frame that limited recall bias or memory distortion of their wording.

Transparency was achieved by documenting the process of sorting, choosing, and organizing the data documenting the stages of data analysis the researcher used, following Braun and Clarke's (2006) method of thematic analysis. Particularly, the challenges in the methods and data analysis in following Braun and Clarke (2006) six-step methodology have been documented in 5.4. Another key way of demonstrating transparency is through self-reflexive practices which was used to generate field notes that contain self- reflective

commentary about subjective feelings and sense making of codes. Coding was scrutinised to ensure the researcher had a clear definition of what the themes were and were not (Braun and Clarke, 2006). The role of the critical friends was 'not to "agree" or achieve consensus, rather to offer critical feedback and encourage reflexivity. The different perspectives offered by critical friend increased the trustworthiness of the data due to the unpacking and challenging of the interpretations made by the researcher as themes were constructed. This then could construct, support and defend the coding outcomes generated (Smith and McGannon, 2018).

5.5 Results

Player's constructions of their pressure experiences were examined using deductive constructionist thematic analysis. Baumeister's (1984) conceptualisation of pressure was used to inform the organisation of incentives for optimal performance under two themes: 'situational incentives' and 'personal incentives'. Situational incentives comprised five sub-themes, whilst personal incentives comprised four sub-themes (see Figure 2). Sarkar and Fletcher's (2012) psychological resilience model informed the organisation of psychological characteristics that facilitate or negatively influence performance under pressure under two subthemes, protective and debilitative factors (see Figure 2).

Following the recommendations of Puig and Pummell (2012) the perspectives of key influencers (parents, coaches', academy staff) are presented allowing a contrasting of perspectives. Findings indicate that perceptions of the sources of pressure and factors of influence largely align so the research offers a summary of incentives and factors of influence above with the exception of the listed sub-themes.

5.5.1 Situational Incentives

Five subthemes of situational incentives were identified, four of which were deductive as follows; presence of competition, time, presence of others, tangible performance outcomes. Inductive coding identified a fifth theme, that being performance lifestyle.

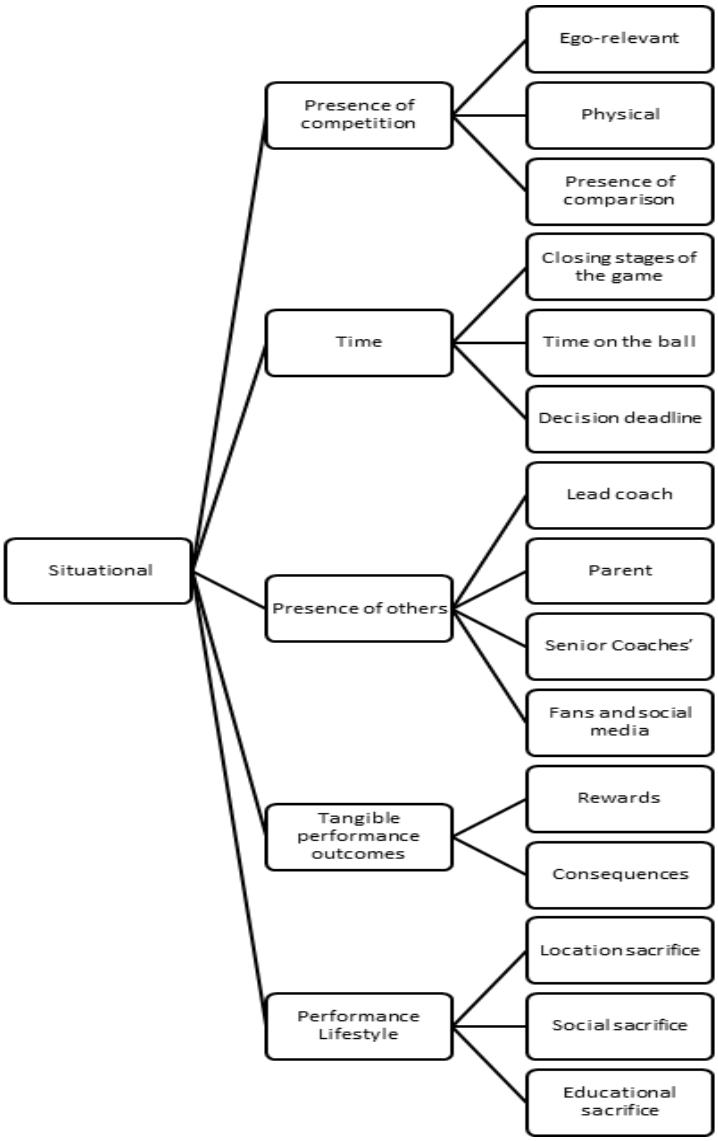


Figure 2. Situational incentives that induce performance under pressure in academy soccer players aged 11-18 years.

5.5.1.1 Presence of Competition

This theme captured notions of optimal performance being perceived by players as superior performance in relation to others. Competitive pressures were commonly described across all age groups, with the presence of competition a particularly significant pressure inducing incentive during tournaments, derby games and stadia environments. These environments evoked a strong desire to demonstrate superiority over teammates, opposition, and trialists (players looking to gain a place at the academy). The extract below captures

competitive incentives to perform optimally noted across all academy age groups. This includes the desire to avoid mistakes, maintain a place on the team, and significance of the competition:

> Player A (age 13): *If we are playing in a local derby that often means something to all of the team…if you are like through to score a goal and you make a mistake you feel like it's all your fault.*

The presence of trialists (players who may gain entry to the academy) were described as increasing the perceived need to perform well, particularly where a player may not have secured a contract:

> Player B (age 16): *There are some people our age that haven't got a scholarship* [first professional contract] *so there is more pressure when trialists come in and they are playing for your position, so you have to try even harder*

With regards competition against teammates, players aged 11-12 years appeared more fixated on competing with players promoted from the under-10 squad, noting a desire to '*push them away'*, and '*fight for their place',* to ensure game time. By contrast, players aged 13-18 years placed greater emphasis on existing age group teammates and the pressure to '*play up an age group'.*

5.5.1.2 Time

Time was recognised by all players as a pressure comprising of; time on the ball, stage of the game and time to contractual decisions. Players perceived time pressures when time on the ball decreased. Facing skilful opposition was described as increasing time pressures by necessitating quicker decisions and more skilful action:

> Player 1: (age 12): *If you play a team like* [perceived weaker team] *you can take on a few players…but against* [perceived superior team] *your freedom comes*

down…it's only one or two touch but sometimes people don't cope with that and they want to have six or seven touches.

Proximity of time relative to the closing stages of the match increased the importance of rapid and accurate decision making when in receipt of the ball. This was due to reduced opportunities to influence on the final result; '*if you don't keep the ball it might cost you a goal and lose the game*'.

Proximity of time in respect of '*decision deadlines'* for team selection and contractual deadlines was also perceived to be pressure inducing. Players recognised that contractual pressure may be helpful or harmful for performance dependant on appraisal. For example, players within the under 15-16 age group discussed longer-term consequences, '*at the start of the season all you think about is getting your contract at the end…so if you make a mistake it really means something*.' The following dialogue taken from the under 11's focus group captures the positive and negative influences that contractual pressures could have on performance:

Players B (age 12): *At the start of the season we were doing really well…but then we started to drop because we were thinking about the contract in the next month*

Player D (age 12): *Yeah but like* [name of other player] *stepped his game up massively and started doing more with it, instead of just playing the little short pass he was thinking out side of the box.*

5.5.1.3 Presence of others

The actual or imagined presence of parents, coaches, senior management and other individuals (fans, scouts, and media personnel) generated pressure. In training contexts, all players described the way in which lead age-group coaches could induce pressure was by verbalising performance expectations. In competition contexts, the critical feedback from the

presence of coaches, senior coaches, and parents during competition were commonly cited as a source of pressure:

Player A (age 11): *In the final there was a lot of people watching*

Player C (age 11): *their manager was coming onto the pitch and shouting and…*

Player D (age 11): …*if you made a mistake like some parents shout at you, even the opposition shout …and that's when the 'what ifs' come into your mind, like what if I make a mistake, are they going to get onto me, am I gunna get bringed off.*

The presence of an audience could induce pressure to demonstrate ability in different ways:

Player C (aged 17): *If this person was playing in front of a big 500 people crowd and he was having a good game he would be upbeat…but if things started to go bad for him then he would start wanting to kill people… it's like embarrassment and what other people think about him obviously he wants to impress people.*

The need to demonstrate ability to senior coaches was discussed as pressure among players because of the perceived influence on their academy progression '*when they* [senior coaches], *come and watch us because you get a chance to impress… you won't get anywhere if you don't impress.'* For players aged 17-18 years, social media exacerbated performance pressures as it presented *'the chance to look good, so if you know it's going to be streamed you've got the chance to be impressive and for people to know about you.'*

As players reflected on their maturation and progression through the academy programme, many noted a reduction in parental side-line pressure during competition:

Player C: (age 15): *It used to be* [pressure]*, because he'd talk me through the whole game but I had starting playing well and now I'm more mature he's just left me to get on with it.*

Pressure resulting from the presence of others was not restricted to game time, post competition review and feedback were also perceived as sources of pressure:

> Player D (age 14): *If you don't play well the managers will say you need to raise your game, your parents will say you need to raise your game and even your teammates will say you have got to do better next time .... you'll get criticised from loads of different people.*

5.5.1.4 Tangible Performance Outcomes

There were perceived rewards or consequences associated with performance that could induce pressure. Namely; contractual incentives, team selection, opportunities for development (e.g., educational trips), physical punishments and no likelihood for a second chance. All players described two specific *'high pressure'* moments; a penalty and one-vs-one situation. In these two situations, the way in which a shot or tackle was executed was perceived as significant in determining outcomes in terms of winning (reward) or losing (consequence) a game.

Contractual incentives induced pressure across age groups. All players were acutely aware of and discussed the importance of consistently performing to a high standard '*because only 1 or 2 % get a professional contract*.' Players discussed how the '*consequences*' of '*getting dropped'* or '*rewards*' to '*play up'* increased the significance of performing optimally:

> Player D (age 14): *If you did something bad the next game he* [lead coach] *might not start you…but then if you play well he might start you or play you with the 15's and if you play up once and you do well you will get a chance to do it again.*

A perceived reduction in contractual pressures appeared to occur when aged 17, and this was attributed to relative contract security at this time:

Player C (age 18): *The second year has been the most pressure. It's like when decisions get made on you… in the first year* [when aged 17]*, if you don't perform you can still have the second year, but then if you don't perform in the second year they won't give you a contract.*

Players aged 11-16 years discussed many physical forfeits that they were required to complete if they performed poorly in training (e.g., '*shuttle runs', 'moving the goals', 'standing against the way in a chair position'*). Players discussed the unpleasant emotional consequences that could result from a forfeit, noting that this was worse if a forfeit attributed to their poor performance incorporated the whole team, for example this under 15 player discussed: *'if you lose then and have to do the forfeit that's like the depression of losing a match…It's even worse if all the boys have to do it'.*

5.5.1.5 Performance Lifestyle

The theme performance lifestyle represents the many on and off-pitch '*challenges*' and *'sacrifices'* players perceived as necessary to become a professional soccer player. All players described the social (e.g. missing birthday parties), educational (e.g. time off school) and lifestyle commitments (e.g. diet) and/or sacrifices that could induce pressure:

Player 3 (age 13): *You've got to make a lot of sacrifices… like all the stuff going on out of school with your mates you think 'oh I can't I've got football' …I've got to leave the house at six but you think this is all going towards being a pro footballer so if I didn't make this sacrifice I wouldn't be a close as I am now…you've got to make the best of it.*

These cumulative commitments and sacrifices were described by players as increasing the importance of performing optimally in training and competition. Players aged 15-18 also discussed how a necessary relocation (moving away from home) was a large sacrifice that could be pressure inducing:

Player C (age 18): *Some days you could have off the pitch things that go on, like you'd want to be at home but I'm 200 miles away…you don't want to train… but you want to make that all worth it.*

5.5.2 Personal Incentives

Personal incentives were personal characteristics that influenced the perceived importance of performing optimally. Two deductive subthemes were identified; self-orientated incentives (Baumeister and Showers, 1986) and public self-consciousness (Mesagno *et al.* 2012).

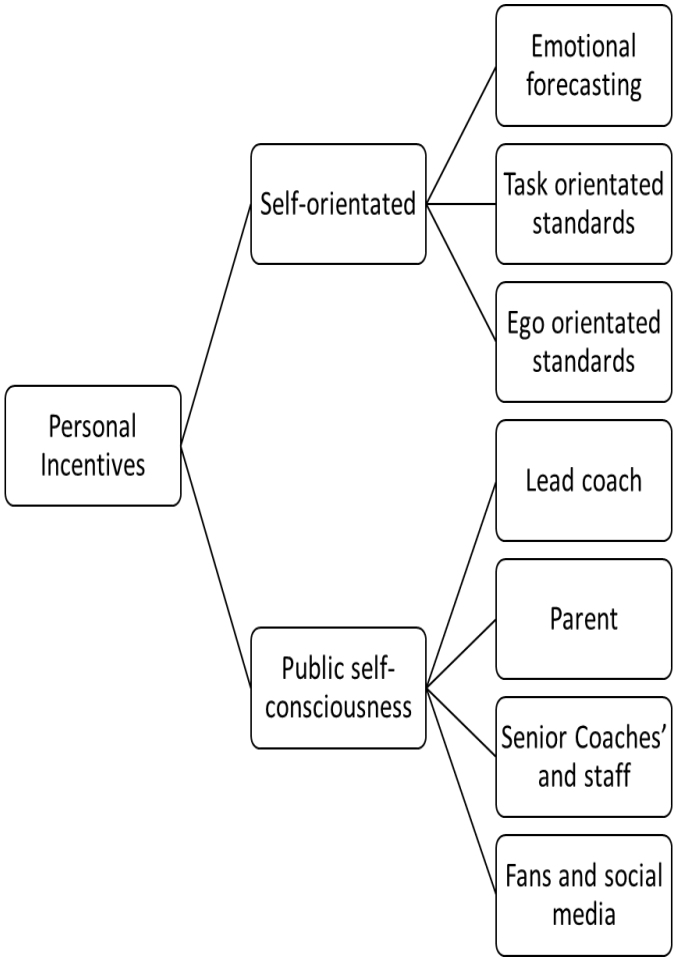


Figure 3. Personal incentives that induce performance under pressure in academy soccer players aged 11-18**.**

5.5.2.1 Self-Orientated

This theme reflects players' task and ego orientations regarding performance. All age groups players described how '*playing and winning games is a challenge'* (ego-orientations), noting the importance of '*being consistent*' (task-orientations) in performing well. Self-determined performance targets and expectations were a source of pressure that could energise performance. Players recognised that '*really high'* self-orientated pressures were debilitative to performance:

> Player B (age 13): *Pressure is like made up of yourself… If you set yourself really high expectations and you aren't meeting them then you will feel pressure to yourself.*

Affective forecasting could increase pressure due to the anticipated pleasant or unpleasant emotions respectively associated with achievement, or not, of self-orientated standards:

> Player 4 (age 16): *I think about winning a lot…there is no better feeling than winning games but if we lose and we play bad then that's my day ruined then, it just puts you in a bad mood.*

5.5.2.2 Public Self-consciousness

This theme reflects players desire to meet the perceived performance expectations and standards of others (e.g., coaches, senior coaches, parents, fans). Players across all age groups described pressure resulting from the perceived expectations of others:

> Player A (age 16): *You can think about the expectations from other people and that gets into your head… you start to think I have to do this or I have to do that… if you can't cope, you think you can't be a player*.

5.5.3 Protective and Debilitative Factors

Informed by Fletcher and Sarkar's (2012) model; *confidence, motivation, challenge appraisal, meta-cognition,* and *perceived social support* were identified as being protective of

good performance under pressure. Of these, *confidence*, *meta-cognition*, and *perceived social support* could also be debilitative of performance under pressure. (see Figure 3).

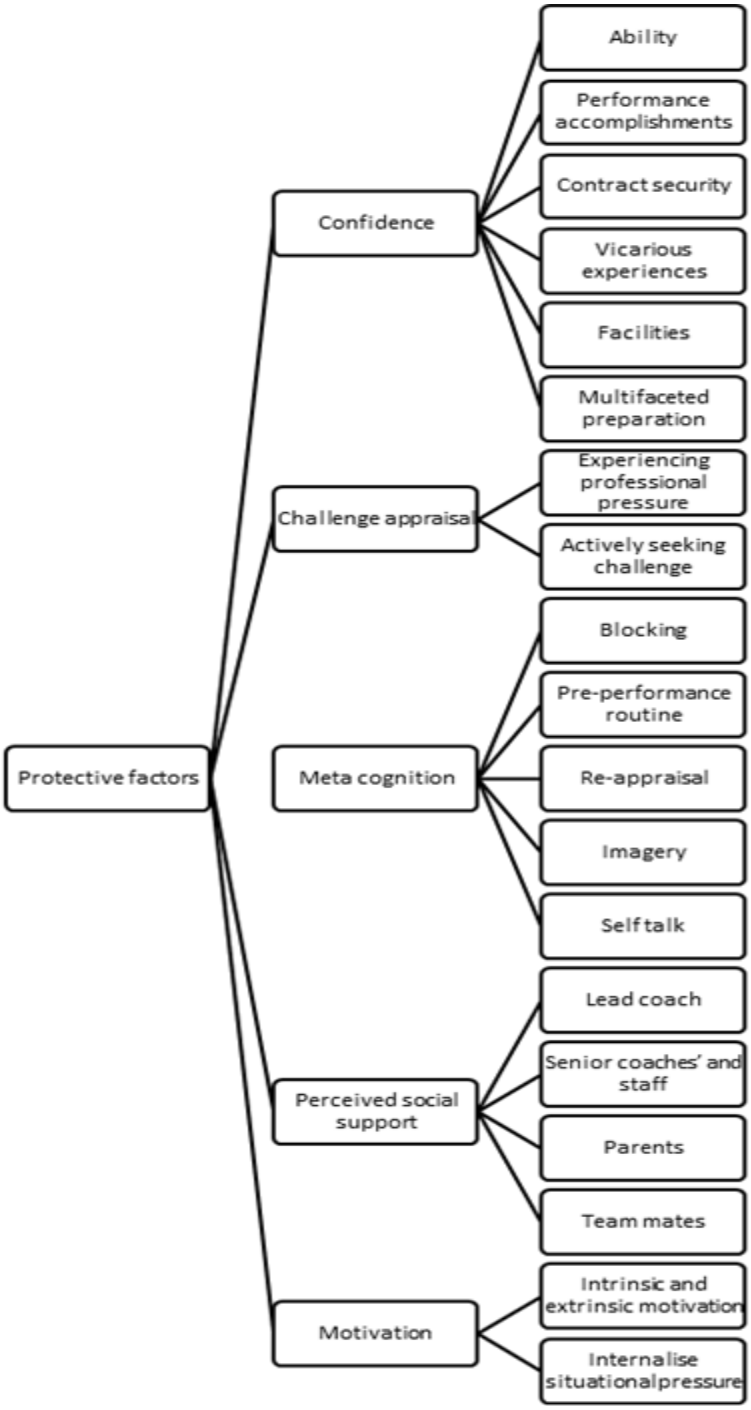


Figure 4. Protective factors for performance under pressure perceived by academy players aged 11-18

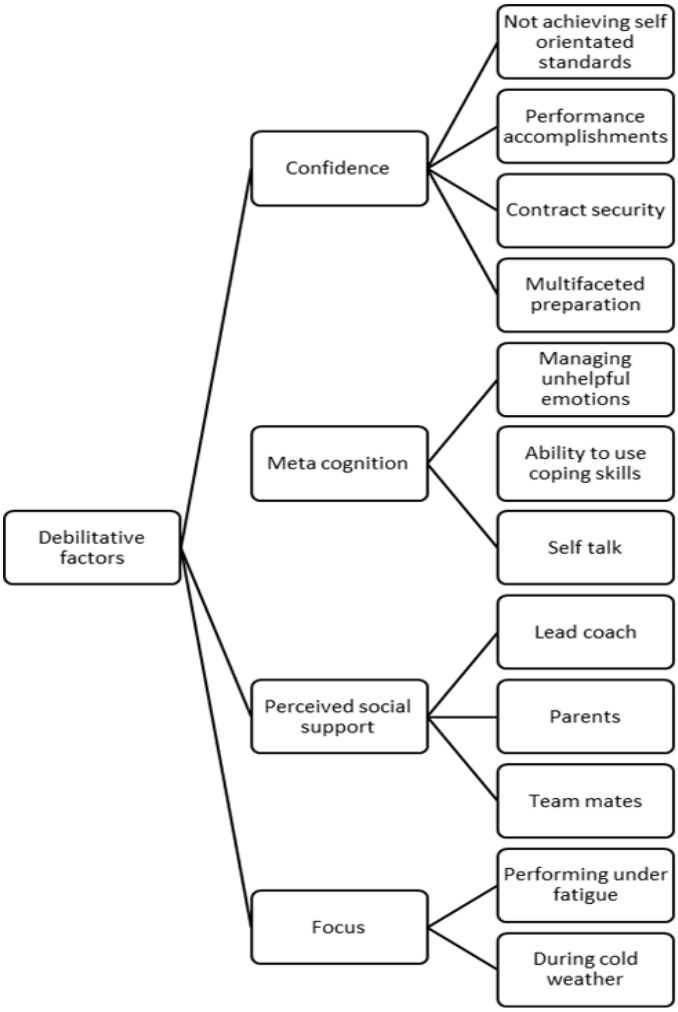


Figure 5. Debilitative factors for performance under pressure perceived by academy players aged 11-18

5.5.3.1 Confidence

Having confidence was described by all players as underpinning an ability to cope with pressure. Various sources were described as developing confidence to perform under pressure including; performance accomplishments, vicarious experiences, and holistic preparation. Players described how confidence to execute a soccer skill helped manage pressure:

> Player C (age 12): *Feeling confident making a really big tackle helps it's such a good feeling and you then you can feel less pressure and more confident…and that's when I'm playing my best.*

Practice under game simulation conditions was recognised by all players as increasing confidence to execute skills during competition. Players discussed how the absence of an evaluative audience, particularly senior coaches, may undermine their preparation for competition pressures: '*you know who is there and who isn't there… everyone watches the first team train, but no one watches us training… sometimes you do wish that an 18's coach was there'.*

Players described sessions that were competitive and included *'game realistic'* pressure scenarios as being beneficial. For example, '*if you are doing a penalty shootout they* [coaches'] *try and do crowd noises to see how you would cope.'* Players aged 13-16 years also discussed how a lack of preparation against opposition of varying physical statures could undermine confidence:

> Player D (age 14): *When you train with the younger ones, you don't have to be switched on a lot but then in a game they* [the opposition] *are twice the size of them* [training players] *so you aren't prepared for that pressure.*

Conversely, practice with older players facilitated confidence to perform under pressure, as this 13 year old player discussed: '*playing with an older group… it taught me to think right I can deal that… I'm close to getting where I want to be.'*

Vicarious experiences noted as beneficial when managing contractual pressure included the transition of academy players into the first team, and ability of their own teammates:

> Player 2 (age 11): *They* [the club] *bring in a lot of academy players...but* [academy graduate] *shows you can get into the first team… it makes you realise that there are other people that want to be in the first team… but shows you can do it.*

Players 11-16 described using the player management application to develop technical and tactical confidence by assisting accurate rather than self-defeating reflections of performance.

5.5.3.2 Motivation

Intrinsic (e.g., excitement and enjoyment) and extrinsic (e.g., beating opponents, winning trophies and contractual incentives) sources of motivation were identified that were perceived to be facilitative of performance under pressure:

> Player C (age 13): *At the end of the day it's your football career…you need to keep working hard because you are always under pressure. There are thousands of kids that are wanting to do what we love doing and if you don't give 100% then they will come and take it.*

5.5.3.3. Meta-cognition

The term meta-cognition describes an individual's knowledge of, and control over cognitions (Flavell 1979; Fletcher and Sarkar, 2012). Players across age groups described how optimal performance was influenced by their ability to have an insight into, and control over, their own mental processes'. Players who reflected on occasions where these efforts were unsuccessful described detrimental performance effects:

> Player A (age 18): *In a game if you make a mistake you might think the same thing is going to happen again, so if you can't block it out you might feel nervous and say I'm not going to get on the ball and stuff like that.*

The ability to thought-stop or re-appraise pressure successfully resulted in a positive behavioural response:

Player C (age 17): *Every game you step out onto that pitch you want to play well and you will play well if you think pressure is just a word, if you don't think it and don't feel it, it is just a word.*

An ability to recognise and respond appropriately to other people's cognitive states could also assist players in the re-appraisal of pressure: '*they* [parents] *want you to do well and if you make a mistake that's when the what if's come into your mind… but at the end of the day you think they are your mum and dad and they just want you to do your best.'*

5.5.3.4 Challenge Appraisal

Challenge appraisal is defined as when an individual evaluates a pressure situation to be within the capability of their available resources (Lazarus and Folkman, 1984). Challenge appraisals were illustrated where players described pressure as presenting an opportunity for growth and future development. For example, this player described how pressure should be embraced as a sign of career progression:

Player C (age 15): *You've got to learn to cope with pressure and the pressure now is like what you'll be under as a professional player…it just shows we are getting closer to our main goal and it* [pressure] *can drive you and make you play better*.

Challenge appraisal also enabled players to experience facilitative interpretations of anxiety symptoms and associated performance benefits. For example, '*When I feel like I'm under pressure it's a good thing, I want to play better and I do play better in my opinion.'*

5.5.3.5 Perception of Social Support

Key sources of social support included the lead phase coach, senior coaches, parents and teammates. Support from others improved a player's ability to re-focus following

mistakes during training and competition. For example, the under 11's discussed the facilitative effects of feedback; '[feedback] *helps… they say right next time, but you know that they have faith in you to do better*.' In contrast, one under 18 player discussed the debilitative effects of feedback; '*he kept drumming it into my head that I needed to keep working… it made me think I wasn't good and I'd seen my performance just drop completely.'* Players within the under 18's discussed how one-to-one support from the coach could '*make you feel like more of a person and not just a player'* and they felt this would enable them to '*relax*' and facilitate higher levels of performance.

5.6 Perspectives of Others Regarding Players Pressure Experiences

The perspective of others with regards sources of soccer academy pressure and factors that may protect or debilitate performance under pressure were aligned but for three exceptions.

Coaches working with the 17-18 age group players believed that the financial incentives of a match bonus presented a pressure inducing incentive; '*it's a pressure, the 30 quid to win on a Saturday means a lot to some of these young boys who have nothing*.' However, the possibility of a match bonus was not discussed by players at all, and only one 17-18 age group player reflected on the possibility of becoming a professional player and the resultant salary as a strong incentive. It seems that for players, financial incentives were either not recognised, or deemed to be of a lesser significance when discussing pressures to perform optimally.

Previous competitive experiences were described by players as pressure inducing, as well as describing this source of pressure, parents also reflected on pressure to perform optimally following release for former clubs, something not discussed by players:

> Parent D (age group 14): [name of player] *got rejected from* [name of another academy] *after he had been there for four years, I wouldn't wish it upon any*

parent, he was isolated, extremely lonely…he now knows it's competitive and has to work hard every day.

When examining factors protective or debilitative of performance, all parents discussed their perceived contributions in helping their son's to develop coping skills. For example, parents often noted their efforts to develop and support independence;

Parent C (age group 14): *I let the coaches tell him what to do, and that is handling pressure in a way as it is handling different information. So by letting him conduct his reviews it can help him learn to manage pressure*

'*What if'* scenarios were also discussed by parents as a method of preparing their son for potential release from the academy which parents believed assisted emotional regulation and enhanced their sons their academy experience rather than '*feel too much pressure'*:

Parent C (age group 14): *Every month out of the blue in the car I ask the boys how you would feel if you ever get released and I always want them to know that it's not that they are not good enough it's just because those set of eyes didn't like us.*

Whilst players identified a withdrawal of parental support around the age of 15 years, they did not recognise this as a strategy intended to develop their ability to cope with pressure. Indeed, other than parental feedback, no other parental strategy was recognised as having influence on their ability to perform under pressure.

5.7 Discussion

The present case study identified pressure conditioned stimuli, along with factors perceived to be protective or debilitative of performance in a professional soccer academy context. Incentives that induce pressure within academy soccer were identified that can be replicated in pressure interventions (Baumeister *et al.* 2007). This is of importance as to

induce pressure, a simulation task must account for situational and personal incentives identified by the target population as meaningful.

Five subthemes of situational incentives were identified; presence of competition, time, presence of others, tangible performance outcomes and performance lifestyle. Tangible performance outcomes, particularly contractual awards, presented situational incentives to perform optimally. Reeves *et al.* (2009) did not identify contractual pressures among academy players aged 11-14, but in the present study, the facilitative and debilitative effects of contractual pressures were identified across all age-groups. With the exception of some under 17 age-group players (with relative contractual security at this time), all players described efforts to demonstrate superior performance and obtain rewards (e.g., playing up an age group) in seeking contract re-newel. Players described being motivated to perform under pressure by the awarding of contracts rather than explicitly noting financial gains (Lazarus, 1999). However, as financial gains follow the awarding of a professional contract, this reward may be implicitly rather than explicitly recognised by players. One means of seeking to replicate tangible outcome pressures, and thus support players in their management of these pressures, is to attach specific performance standards to simulation testing. The attainment or failure to attain these standards would result in a respective reward or consequence (Bell *et al.* 2013).

The presence of competition from team mates, opposition and trialists were recognised by all players as increasing pressure to perform. Intra-team competitiveness (e.g., competition against one another or a trialist for team selection or contract) was particularly meaningful across age groups, indeed for some players, pressure to outperform teammates was perceived to be more significant than outperforming opposition. Performing against superior competitors decreased decision-making time and required greater physical and technical ability, all of which induced pressure. The implication of these findings are that to

induce meaningful competitive pressure, simulation should be performed at a performance intensity that induces time pressures in ball handling, and must also comprise performance comparisons (e.g., ranking system) across the squad.

Coaches', parents and senior coaches were perceived to be influential in player's career progression and also in their public image (Mesagno *et al.,* 2016). Players described the way in which significant others could trigger self-doubt or increase motivation and efforts to perform optimally. When developing a simulation task, performance pressure can be generated through manipulations (DeCaro *et al.,* 2011) such as increasing the audience size or using different important audiences (e.g., parents, or senior coaches).

Two personal pressure inducing incentives were identified; self-orientated and public self-consciousness. Players described a combination of task and ego-orientated incentives to perform optimally which appeared to be influenced by goal-difficulty. High expectations implicit in difficult goals tend to generate greater pressure to excel and, as a result, spur greater effort in order to boost performance (Senko and Harackiewicz, 2005). The pressure to achieve difficult performance standards may also influence pressure experiences prior task engagement (Senko and Harackiewicz, 2005). For example, players discussed how affective forecasting (e.g., ruining day following a poor performance) could motivate them and induce facilitative anxiety to perform pre-competition. The setting of specific personal performance goals prior to simulation training could be used to induce personally meaningful pressure for performance.

Learning to cope effectively with pressure is facilitated by exposure to meaningful pressure, and also by providing a supportive context for learning (Fletcher and Sarkar, 2016). Five factors were identified by players that were perceived as supportive of learning to perform and performing under pressure. These were confidence, motivation, challenge appraisal, meta-cognition, and perceived social support

Confidence was a factor deemed to be either facilitative or debilitative to performance. The significance of preparation in supporting performing under pressure was well recognised and has previously been acknowledged as a salient source of confidence and means of enhancing psychological control (Sarkar and Fletcher, 2012). The practice of bio-banding (grouping athletes based on growth or maturation; Cumming *et al*., 2018) within simulation training may offer players physical challenge and exposure to competitive pressures that they may not experience within their age-group. As an alternative to bio-banding, time constraints imposed in making a pass, shot or tackle could be incorporated within simulation training.

Meta-cognitive skills (e.g., rationalising, reappraising, blocking, and positive self-talk) helped players cope under pressure by reducing rumination (e.g., thoughts of previous mistakes) or anticipatory thoughts (e.g., worrying about the end result) which could debilitate performance under pressure. The ability to maintain attentional control is of importance, as distraction theories (e.g., Beilock and Carr, 2001) note that focussing attention toward threat may reduce available attentional space, and reduce focus on task-relevant stimuli. Developing the use of psychological skills that support task-relevant attentional focus will help performance under pressure. For example, self-talk strategies can be used to manage unhelpful thoughts supporting confidence and appropriate attentional focus (Neil *et al.*, 2011).

Mesagno *et al.* (2016) found that individuals with a strong '*athletic identity'* are more likely to experience catastrophic thinking if under-performing within an evaluative competitive situation due to the reflection it may have on their 'athletic image'. Hodge and Smith (2014) advocated a 'keep sport in perspective' philosophy via a sport/life balance was a key component to avoid such debilitative effects within elite performers. Moreover,

workshops developed to reinforce player's knowledge of other social roles would be important.

Challenge appraisal also helped protect players from the potential negative effects of pressure. Echoing the findings of Swann *et al.* (2017) the internal desire to perform under pressure and view pressure as a challenge can result in individuals "stepping up" effort and excelling under pressure. Mentoring players to appraise pressure as challenges can be achieved through cognitive behavioural workshops which involve cognitive restructuring (Hill *et al.,* 2009) to minimise catastrophic thinking and counterproductive beliefs (Fletcher and Sarkar, 2012).

Another strategy that may have been attributed towards facilitative performance under pressure is social support. To induce meaningful competitive pressure, a simulation task must contain performance comparison (e.g. ranking system) across the squad. However, this may produce an *'outshine your rivals'* mentality, which can result in individuals engaging within avoidance coping or seeking social support from outside of the sporting environment rather than consulting with teammates, practitioners or coaches (Miles *et al.,* 2016). Moreover, throughout the process of simulation training it is essential to equip athletes with effective coping strategies and self-help activities protective of performance under pressure.

Social support has been shown to impact performance via an increase in perceived resources available to cope with the situational demands, feel more in control and subsequently view pressure as a challenge (Lazarus, 1999). Players within this study discussed the importance of perceived informational support in which provided players the important soccer guidance and advice alongside esteem support in which bolstered a player's sense of competence or self-esteem to facilitate performance under pressure. A key strategy parents believed assisted their son's ability to perform under pressure was fostering independence. Parents who foster a balance between support and independence are more

likely to cope with adversity and be motivated by challenge (Ross, Mallett, and Parkes, 2015). Subsequently, soccer academies could provide support for parents to develop and share valuable learning experiences to facilitate the development of fostering independence through parental workshops (Holt and Knight, 2014).

A strength of the present study was use of the Intrinsic Motivational Inventory pressure subscale (Deci and Ryan, 1995) to purposively select players for interview on the basis of different experiences of pressure. This study also sought perceptions of player's pressure experiences from multiple perspectives. This informs the development of pressure interventions by evidencing a consistent perception of the sources of pressure and factors influencing performance under pressure. In evidencing commonalities from multiple perspectives, it is possible to gain support from key stakeholders for subsequent pressure simulation interventions.

There are limitations that must be acknowledged with the present study. Within a focus group climate, whilst players did discuss some sensitive information (e.g., parental, coach and teammate pressures), it is plausible that respondents were not willing or able to discuss all thoughts and actions associated with a troubled personal experience, or engage in emotional disclosure in front of others who are perceived as competition (Folkman and Moskowitz, 2004).

A further limitation of the study was the lead researchers' dual role (researcher and practitioner). Although helping to build rapport and understanding of culturally specific terminology, this dual role may have influenced participant responding, and subconsciously produced bias or misinterpretation in data interrogation. The author attempted to minimise any bias through the reflexivity process (Smith and McGannon, 2018).

The findings of this study have practical value in highlighting meaningful performance incentives that should be incorporated in pressure simulation interventions in

football academy contexts. The identification of protective and debilitative factors may inform the development of support packages for players that are adjunctive to simulation interventions and promote those intra and inter-personal attributes protective of performance under pressure.

CHAPTER SIX: CAN YOU TEACH ELITE ACADEMY SOCCER PLAYERS TO PERFORM UNDER PRESSURE? EXPLORING PRESSURE TRAINING WITHIN ELITE ACADEMY SOCCER

"We have got to know how to prepare them [England soccer players] to make them more resilient when it comes to those pressure-cooker games is the job we've got to do going forward." (Glenn Hoddle, following England's defeat to Iceland in the Euro 2016 championship)

6.0 Introduction

There are an estimated 12,000 adolescent male academy soccer players aged between nine and 16 within Premier League academies (Conn, 2017). At 21 years of age, five out of six academy soccer players are no longer playing professional soccer. These statistics demonstrate the pressurized nature of the academy system which requires players to utilise a range of psychological qualities to withstand or thrive under such pressure (Brown, Arnold and Standage, 2017).

Pressure refers to various situational or personal incentives to produce high levels of optimal performance (Baumeister and Showers, 1986). Inability to cope with pressure can result in 'choking', whereby the individual can fail to execute automated skills in critical moments that they are otherwise capable of, such as crossing, shooting and passing (Masters, 1992). Beilcock and Carr (2001) also describe how pressure can change the attentional

mechanisms and memory structures supporting performance which can impact upon player's decision-making. Choking experiences also have the potential to evoke negative psychological effects influencing long-term development (Hill and Shaw, 2013).

Drive theories propose that performance under pressure can be determined by levels of 'drive' in which can benefit or undermine performance. The Biopsychosocial model (BPSM; Blascovich *et al.*, 2003) has been a popular model used by researchers (e.g. Turner *et al.,* 2013) to explain individual differences in 'drive' that influence performance under pressure by their evaluation of situational demands and personal coping resources. The BPSM suggests that the type of appraisal given to the performance situation is represented by challenge and threat (Blascovich *et al.,* 2003). A threat state is defined as when an individual perceives insufficient resources (e.g., skill, knowledge, social support, or equipment) to meet the demands of a situation. Threat states are proposed to hinder performance as they are associated with disrupted attentional control, increased heart rate, and muscular tension (Blascovich *et al.,* 2008). Whereas a challenge state is when an individual perceives resources to meet the demands of a situation (Lazarus, 1999). Challenge states are associated with superior performance when compared with a threat state due to improved decision making and maintained cognitive function (Turner *et al.,* 2013). The BPSM has informed the development of coping under pressure interventions intended to assist athletes' in optimally appraising highly pressurised competitions which encourage more favourable emotional and attentional responses under pressure (Fletcher and Sarkar, 2012). It therefore follows that, in order to foster academy soccer player's performance under pressure, developing skills of positive cognitive appraisal will enable an adolescent player to cope under pressure.

The systematic review (chapter three) collated the interventions utilised within broad literature and presented simulation interventions in combination with cognitive behavioural (CB) workshops to be most effective for enhancing performance under pressure. CB

workshops are beneficial for the development of performance under pressure as they promote focus, self-awareness and the efficacious use of coping strategies such as reappraisal and resource accumulation (e.g. Olusoga *et al.,* 2014). Simulation training (ST) acts on the principle of exposing the athlete to meaningful contextual incentives to improve self-regulatory process involved with managing anxiety to perform under high levels of anxiety within competition (Mesagno and Beckmann, 2017). There are potential benefits of engaging within reflective practice alongside both CB and ST as a method to transfer and maintain learned coping skills (e.g. Olusoga *et al.,* 2014). The process of reflective practice scaffolds learning of the reflective process, nurtures critical thinking, and promotes reflective insight (Neil *et al.,* 2013). Particularly, for adolescents a structured approach would provide a powerful pedagogical resource that supports the development of critical reflections (Gadsby and Cronin, 2012).

Multicomponent interventions, such as the one proposed within this thesis can be particularly advantageous in group settings such as a soccer academy, not only in terms of resource and time management, but also team bonding. Hodge and Smith (2014) stated team-sports such as soccer are multi-dimensional in terms of its decision-making. A multi-component intervention takes into account the importance of developing a broad spectrum of coping strategies to deal with the various performance pressures (Johnston and Cannon-Bowers, 1996).

Limitations reviewed within the systematic review (chapter three) point to specific factors which need to be accounted for in future work to ensure the delivery of coping interventions is as effective as possible; particularly, the importance of contextualization of interventions. Incorporating contextual factors, may improve the transfer of coping skills within ST as they consider the nature of the pressure encountered and aim to develop the perceived coping resources to perform under such pressure. Therefore, the information

derived from study one (chapter five) which explored the incentives that induce pressure across elite academy age groups enabled the researcher to build a conceptual pressure inducing framework to underpin ST. Additionally, by understanding the contextually relevant protective and debilitative factors the researcher can adopt a client-centred approach and facilitate the development of psychological skills which can systematically underpin the type of cognitive-behavioural support the players received.

This aim of this study was to design, deliver, test and evaluate a contextually specific intervention to improve the skill to perform under pressure in academy soccer players. The researcher aimed to examine a) does a cognitive behavioural workshop and reflective practice intervention integrated with simulation training enhance performance under pressure (*decision-making x execution of skill*) to a greater degree than simulation training intervention delivered independently b) what effect do simulation training, cognitive behavioural workshops and reflective practice have on players' performance under pressure. To address these aims two studies are presented in this chapter, firstly the development, and testing of the intervention is presented and secondly a study to evaluate the intervention is presented.

6.1 Part One – Intervention Development and Testing

6.1.1 Method

The method is in two parts; firstly the development of the simulation training in the context of academy soccer is described, secondly the procedure for the design, delivery and testing of the intervention is outlined.

6.1.1.1 Participants

One hundred and twenty-two male academy players (11-18 years) attached to a category one soccer academy completed the pressure/tension subscale from the Intrinsic Motivation Inventory (Deci and Ryan 1994). The two players scoring highest and lowest

from each academy age group then participated in focus groups to examine their experience of pressure. However, due to the release of players from their academy contract, or because players were injured, ill or not present during a testing session at the academy, only 51 male academy players were able to take part in the pressure intervention or control group (11-12; *n = 20;* 13-14*; n = 14;* 15-16; *n = 5; 17-18; n = 12*). No players declined the opportunity to take part. All participants were made aware of the purpose and requirements of the study prior to providing informed consent at the information session at the start of the soccer season in the first week of September.

6.1.1.2 Design

An A-B-A design was used to examine the effects of simulation training upon performance. To examine the effectiveness of the pressure intervention on performance, three tests were conducted every six weeks over an 18-week period. Gilbourne and Richardson (2006) suggest that practitioners will be more successful when working with sporting establishments if they can become embedded in the existing regimes that the given club already operates in. Players within the current soccer academy work on a six-week performance cycle that targets different elements of the player's performance every six weeks. Subsequently, testing every six weeks was the chosen date of every re-test as aligned with the start and ending point of each players regular programme.

6.1.1.3 Dependent Variables

Bell *et al.* (2013) advocated that it is important to assess players ability to perform in a variety of pressure scenarios rather than global performance. Following the suggestion of Bell *et al.* (2013), Stoker *et al.* (2016) designed a netball pressure simulation that utilised closed-skilled drills, however the drill designed did not emulate the rapid decision-making process that may be subject to deterioration or clutch performance under performance

pressure. Kinrade, Jackson and Ashford (2015) suggest that soccer presents many perceptual-motor tasks that involve cognitions required to make a decision accompanied by a motor response (e.g. crossing; the type of cross and/or the intended outcome of the cross). This process of decision making based on presented stimuli and experience and the associated motor responses can be affected by pressure (Kinrade, Jackson and Ashford, 2015). Consequently, skill execution (SE) and decision-making (DM) were the dependant variables assessed in the present study as indicators of performance under pressure during a simulated soccer scenario.

6.1.1.3.1 Measurement of Dependent (Performance) Variables (Decision making and Skill Execution)

Coaches graded players on the decision-making and skill execution in accordance to the expectation level of that player. Subsequently, the lead and assistant coach took part in the marking of the players so that their expectations for that player could form part of their grading of the player's performance' to ensure that the deterioration or enhancement in performance was relative to their skill level (DeCaro *et al.*, 2011). Four players took part per simulation training (2x attackers, 2x defenders), the lead coach and assistant coach would be marking either the attackers or defender. Objective methods of performance were not calculated due to the uncontrollable variables that may influence results. For example, a player may have made a poor shot and the ball deflected into the goal, mistakes of the opposition, skill level and physicality of the opposition. Performance statistics were generated by coaches using a tick box rating system of 0-3; 0= below expectation, 1= to expectation and 3 being above expectation. The choice of this point system was aligned with Gilbourne and Richardson (2006) suggestions to embed practice within a soccer theme, where in a league a team who wins a game would gain three points, draw would be one point and a loss would be 0. Performance statistics were generated for both DM and SE and

totalled together following the task. The maximum number of points available for 10 balls for DM or SE would equate to 30 points, therefore players could obtain an overall score of 60 points. This measure was taken from the lead and assistant coaches within each age group.

6.1.1.4 Independent Variables

Data were analysed to see if the intervention improved performance as evidenced by significant differences over time, that is, participants improved with practice. Of course, some participants received simulation training and others simulation training plus intervention, and so a between-subject factor was used to differentiate results with the notion following the intervention led to significantly greater improvements than following simulation practice alone. We were also interested in the extent such difference might be moderated by age with participants training in the following four age groups (11-12; 13-14; 15-16; 17-18).

6.1.1.5 Inter-Rater Reliability

In order to assess the consistency of the coaches' rating of DM and SE within the simulation training and assess the measurement reproducibility an inter-rater reliability test was conducted. Inter-rater reliability represents the extent to which the data collected in the study are correct representations of the variables measured.

All age group coaches that participated within the assessment of the simulation training were shown a series of 5 balls and asked to mark the player receiving the ball first in each video clip. The kappa statistic was used to assess the reliability of each coach (<0 less than chance agreement, .01- .20 slight agreement, .21- .40 fair agreement, .41 - .60 moderate agreement, .61- .80 substantial agreement and .81-.99 almost perfect agreement, Landis and Koch, 1977). Two coaches from each age group who took part in the pressure testing analysed five balls to assess inter-rater reliability for accuracy for each age group (11-12; k= 0.68; 13-14; k = 0.83; 15-16 k = 0.39). Due to the loss of data from the under 18 group, the

lead under 18 coach was asked to re-mark the pressure testing from the video of the tests. The coach was told he could only watch the footage once and subsequently this did not infer an issue with inter-rater reliability. McHugh (2012) suggested that kappa scores below $k = 0.41$ must be treated with caution. Therefore, it is important to consider the inter-rater reliability was only 'slight agreement' with the marking within the 15-16 age group.

6.1.1.6. Simulation Training

The simulation training served as both an intervention and method of quantitative assessment of player's ability to perform under pressure. The design of the simulation training was underpinned by the findings of study one (chapter five) which established the incentives that induce pressure within age-groups (11-18 years). All academy players ages 11-18 years were asked to complete the five-item pressure/ tension subscale from the Intrinsic Motivation Inventory (Deci and Ryan, 1994). The four highest and four lowest scoring players from each academy age group were selected to participate in focus groups to examine their pressure experience. Focus groups were also completed with 16 parents (mothers; $n = 7$; fathers; $n = 9$) across age-groups 11-16 years (11-12: $n = 5$, 13-14: $n = 5$, and 15-16: $n = 6$). Parents from the 17-18 age group were not included as most of these players lived away from home (e.g., international players, parents living more than two-hours away from the academy). Individual interviews were undertaken with nine academy football coaches (lead coaches $n = 7$; support coaches $n = 2$), two strength and conditioning coaches, and two education and welfare officers.

Following the establishment of pressure incentives, during a coaching development session (coaches and academy staff participate in four of these sessions per year) coaches and academy staff were presented with the 'situational and personal pressure incentives' model (see figure 2, chapter five). The researcher defined, discussed and provided narrative

examples of perceived pressure within an interactive session which allowed all staff to develop an understanding of players' perception of pressure. Coaches' were asked to create a simulation drill that incorporated the listed incentives, which could be adjusted in accordance to developmental differences identified within study one and replicate pressure moments within soccer (chapter five). The aim of the task was for attackers to score and defenders to de-possess the attackers, however players were informed that they were to be assessed on their decision-making and skill execution.

The simulation training task took part in a 25yard (metric used within soccer) coned section from the goal line. The tasks included two attacking players and two defending players. Players were given ten soccer balls, placed upon three flat discs 25yards from the goal line, positioned 9 yards apart from each other. The age-phase lead coach provided the players with one explanation of the simulation drill. Instructions from coaches emphasized the comparative and evaluative nature of the task by informing players that their performance will be published on a public leader board (*presence of competition*), with the top three performers awarded rewards and the bottom three performers receiving consequences (*tangible outcomes*). The drill was being observed and marked by the lead and assistant coaches alongside a loudspeaker playing crowd noises simulating a full stadium (*presence of others*) The drill was completed 10 times, players were only given 30 seconds recovery between each ball (*time*). As identified within study one, players aged 15-18 age-group discussed fatigue to influence decision-making and skill execution. Subsequently, ages 15-18 where asked to complete 5 x 40metre sprints, with 35 seconds recovery to induce physical fatigue prior to the testing (Baker, 1993). The sport scientist monitored the speed of these runs using light speed gates to ensure players achieved maximal high- speed running; no players achieved a time that was perceived to indicate a lack of effort.

The simulation training commenced when the crowd music was played, and defender 1 played a firm, floor pass into attacker 1's feet who was positioned 18 yards from goal line (marked by a flat disc) with his back to goal. Attacker two and defender two were positioned 15 yards away from the goal line and positioned centrally behind attacker one. Upon receiving the ball attacker 1 then proceeds to attack the goal. For each ball (total of ten balls), attackers (coach one) and defenders (coach two) were individually assessed on decision making, and skill execution relative to that player's ability level. Each outcome was assessed on a rating scale of 0-3 points, totalling a maximum of six points per ball (see Appendix 2 for scoring sheets). All simulation training was conducted within the academy's indoor venue, to ensure weather conditions did not interfere.

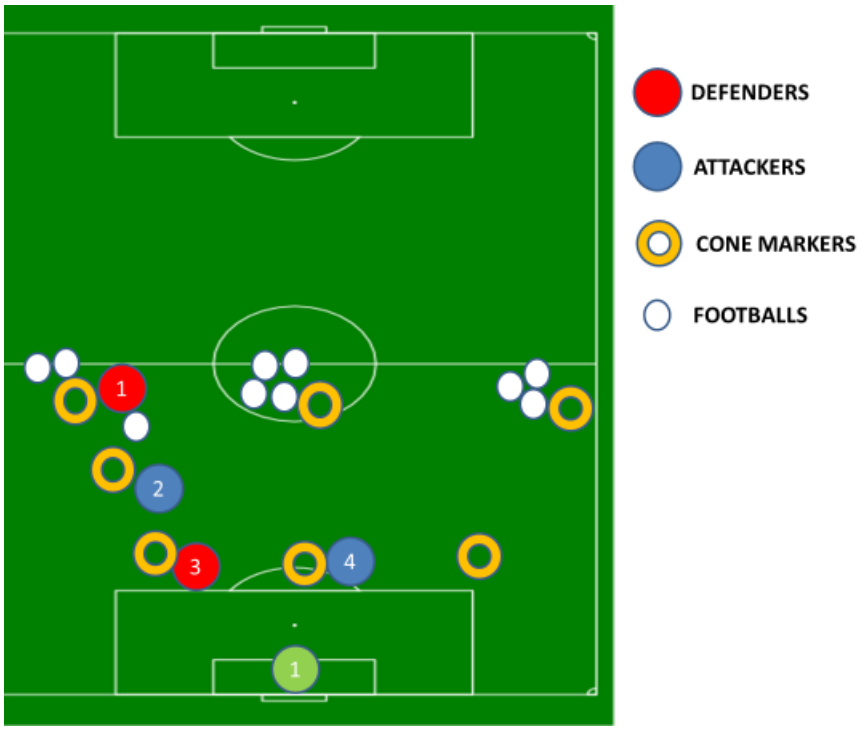


Figure 6. The simulation training pressure task as designed by academy coaches' and sport science staff

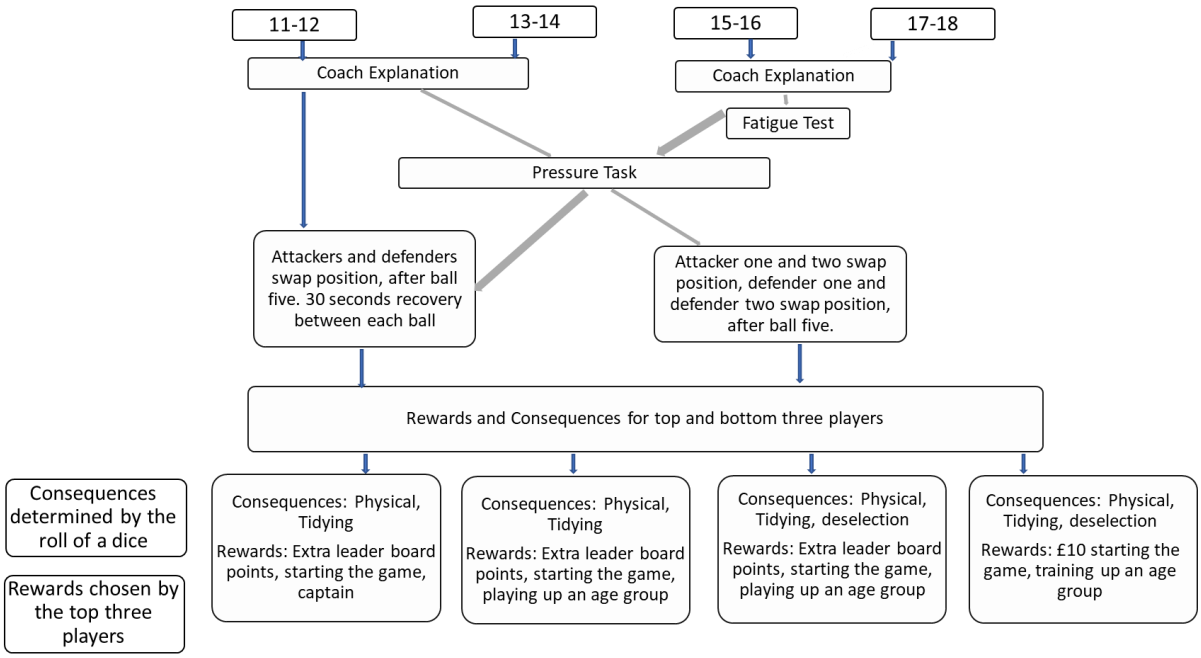


Figure 7. Perceived incentives to induce pressure across academy players ages 11-18

6.1.1.7 Pilot Test

Pilot testing of the simulation was conducted on players within the under 23 team and under 10 team who were not part of the main study to determine appropriate angles and distances from goal. Following the pilot test, the distances between the flat markers were reduced for the under 11-12 age groups and increased for the 13-18 age groups. It was also agreed that, the two attackers and two defenders should swap position at ball five to ensure a) learning effects were minimized, b) but to ensure the player receiving the ball first who coaches suggested is under the 'most pressure' is 'equally challenged'. As part of the long term athlete development model (FA, 2018) under 11-12 are not yet designated as an attacker or defender, therefore after ball five attackers and defenders were asked to swap over roles.

6.1.1.8 Pressure Manipulation

Aligned with Baumeister's (1986) definition of pressure it was important to ensure that the simulation task was meaningful for players to perform optimally. Subsequently, interviews were undertaken following the simulation training to evaluate perception of pressure. However, it is important to note that individuals who may have the resources and efficacy to effectively cope with pressure conditions may not perceive/report felt pressure due to automatic and unconscious coping skills (Blascovich *et al.*, 2000; Seery, 2011). To ensure that any potential absence of pressure is due to unconscious coping, parents and coaches were also asked to provide their perceptions of pressure inducing incentives they believed were present within the simulation training.

6.2. Design of Intervention

6.2.1 Procedure

Information sessions were held for all full, part-time coaches and sport science staff where the aims and objectives of the intervention which were clearly communicated by the lead academy psychologist, researcher and other key members of staff, including the academy manager. After institutional ethics approval was granted, an academy parents psychological information evening was held with the lead academy psychologist, researcher, and academy manager in which the purpose and protocol for the intervention was explained to the parents and consent was sought for their child to take part in the 'performing under pressure' intervention. Parents/ guardians of academy players were also emailed to ensure that they were able to withdraw their child/ player from the research at any time of the study. All players completed the first simulation training session (see Figure 4 and 5). Following the first simulation training session participants were grouped in accordance to their date of birth 'age-phases'; 11-12, 13-14, 15-16, 17-18. The names of participants were entered into an online random allocator whereby half of the squad were selected to participate within the

intervention which comprised of a contextualised cognitive behavioural workshop and weekly reflective practise tasks. Players that were randomly selected to participate within the first intervention group completed the three of the cognitive behavioural workshops over six weeks. Players were also asked to complete a section on their player management application following the competitive fixture at the weekend of when they had completed a cognitive behavioural workshop. Following the completion of all three workshops over six weeks all players completed the simulation training again (simulation training two). The players then completed the simulation for the third time six weeks following.

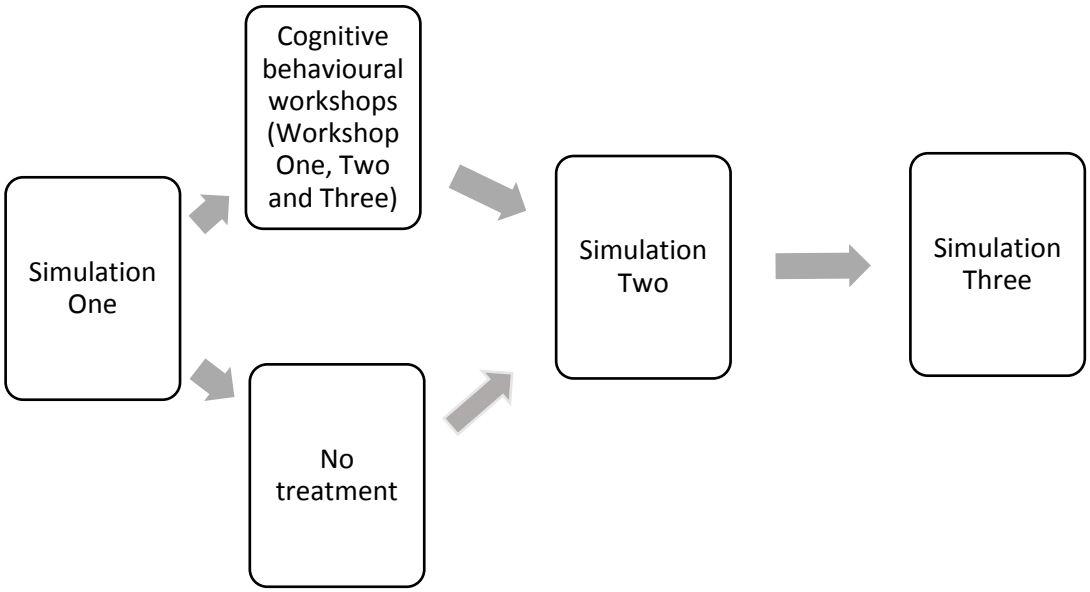


Figure 8. Simulation and cognitive-behavioural workshop plan

6.2.2. Ethical Considerations

A researcher's primary responsibility is to protect participants from physical and mental harm during the investigation and not be exposed to risks greater than or additional to those encountered in their normal lifestyles. Bell *et al.* (2013) suggest that some practitioners may

be concerned with developing a mastery environment and the fear of the negative emotional and motivational consequences that may be associated with simulation training. However, simulation training is to replicate the pressures of elite sport that players will be naturally exposed to during performance. Subsequently, one may argue that it could be more unethical to not prepare athletes to deal with the threats they will face on a regular basis in the world of elite sport. In research involving adolescents, the British Psychological Society (2018) states that great caution should be exercised when discussing the simulation training results with parents and the importance of ensuring they understand the developmental purpose of the intervention and that it will not be used for contractual decisions. In the light of experience of the investigation, or as a result of debriefing, all players were informed of their right to withdraw retrospectively any consent given, and to require that their own data, including recordings, be destroyed. Finally, during the 18 weeks that this study was being conducted the researcher withdrew individual consultancy from the academy. However, for player's that did wish to seek individual one to one support during the data collection period, the respective players' data was removed from the study. Two under 15 players during the study received additional psychological one to one support and subsequently their data were removed from analysis.

6.3 Part Two: Intervention

A multi-component intervention was developed to assess if incorporating cognitive-behavioural workshops (CB) and reflective practice intervention integrated with simulation training (ST) enhanced performance under pressure to a greater degree than ST delivered independently.

The content of the CB workshops was underpinned by study one (chapter five) which identified the protective and debilitative factors that may influence performance under

pressure. The planned structure for the intervention was three group workshops with the researcher's role within the workshops to facilitate discussion and deliver psycho-education. Facilitation was achieved through asking pre-planned questions to the players (e.g. can you describe a time you felt under pressure.', whilst also using a series of prepared prompts to support players and guide them towards answering the questions should they be unable to answer the initial questions (e.g. *what may an unhelpful thought do to your ability to focus?*'). The purpose of this approach was to initiate the development of social skills and encourage open communication, facilitating the creation of a learning environment in which players are empowered and potential barriers of communication are removed (e.g., not feeling confident to talk). Psycho-education is important within cognitive behavioural philosophies to assist with the client's understanding of the model and how the process of change can occur (Curwen, Palmer and Ruddle, 2000). To support the learning of psychological skills each workshop included an interactive non-soccer 'pressure task' to extract learning and judgement through experience which was the rational for including a practical activity (Paulus *et al.* 2014). This task was a player-centred constructionist exercise promoting concept attainment through experiential practice (Shuell, 1986). This did not serve as a form of simulation training as was not designed to elicit the desired cognitive, behavioural, and affective responses that underpin contextual performance pressure as seen in chapter five (Kozlowski and DeShon, 2004).

The workshop also included custom video interviews with senior first team players that related to the theme of each workshop to provide support to the delivered content. This provided enhanced efficacy expectations specifically when observing successful performances (Bandura, 1977). Similarly, first team players also act as a source of verbal persuasion whereby the senior players 'persuade' adolescent players that coping skills can be learnt (Bandura, 1977). All workshops lasted 30 minutes and were conducted within the gym

studio of the academy. Unfortunately, for workshops one and two, all three players attending psychological sessions of the under18 age groups missed the intervention tasks due to timing, the workshops were subsequently condensed to 15 minutes.

6.3.1 Workshop One: Preparing for Pressure

Following an initial outline of the programme, workshop one aimed to introduce the concept of pressure and engage players in discussion about the importance of coping skills and how they may be used to enhance or maintain performance under pressure. Within the first stage of a cognitive behavioural workshop it is important to keep referring back to the definition of the psychological concept (pressure) to ensure consistency with the understanding and intention of the intervention (Ludlam *et al.,* 2017). Two senior first team players also discussed the concept of pressure drawing upon positive and negative implications of pressure on video, to underpin the importance of coping skills. Following this, players completed a darts practical task with an emphasis on generating pressure.

Danish *et al.* (1993) highlighted the importance of young people being aware of the skills they have learned. Therefore, to facilitate the development of meta-cognitive skills through self-awareness reflective practice was a key component that was introduced to players. Players were presented with the reflective practice box (see Appendix 1).

6.3.2 Workshop Two: Practicing for Pressure

Workshop two was initiated with a ‘re-cap’ and group reflection task to serve two purposes: (a) to reflect on the activities from the previous session, and (b) to discuss how their experiences in transferring any of the learnt knowledge from the previous week.

The concept of ‘trusting in training’ was presented to players to underpin the importance of holistic preparation which is related to confidence. Players were asked to discuss and identify how they may take ownership over various aspects of their preparation

(physical, mental, technical, and tactical). Aligned with the cognitive behavioural philosophy and the protective factors identified within study two it was important to develop meta-cognitive skill by facilitating discussion on how thoughts, moods, behaviours, physical reactions and the environment are interconnected and influence performance under pressure. In line with the suggestions of Cropley *et al.* (2010) players were presented with anonymous extracts from reflective practice tasks, for the purpose of confidentiality extracts from players of different age groups were used. This was because (1) reflective practice is about learning from experience; (2) reflection can improve practice; and (3) reflection involves respecting and working with evidence. A senior player and interactive ping-pong game was used to support CBT principles of linking thoughts and beliefs to performance. The psychological skill of self-talk was also presented as a strategy they could use to enhance perceived control understanding and exploring helpful thoughts and emotions and the appraisal process (Neil, Mellalieu and Fletcher, 2011). Finally, the session commenced with reinforcing the importance of reflective practice to ensure players continued to complete their reflective practice task.

6.3.3 Workshop Three: Thriving Under Pressure

Workshop three was also initiated with a review and group reflection task to reflect upon the previous workshop session. Workshop three was based upon the process of appraisal. Performers' appraisals of stressors were associated with their experience of emotional responses (Lazarus, 1999). Players gained psycho-education on how anxiety is not always detrimental to performance and can be influenced through the process of appraisal. This session was underpinned by the biopsychosocial model (BPSM) of challenge and threat (Blascovich *et al. 2001*) whereby the implications of confidence and control could underpin challenge or threat states in response to competition. The notion of challenge and threat states were underpinned within a golf putting game. Finally, player's reflective extracts were

presented again, and players discussed how the states of challenge and threat related to these extracts. Players were asked to discuss any changes in what the player may have done differently for future pressure scenarios.

6.3.4 Reflective Practice

A structured reflective practice intervention was adopted as it provides a powerful pedagogical resource that supports the development of critical reflections (Appendix 1; Gadsby and Cronin, 2012). Every player within a category one academy has access to an online application (PMA) which is a resource tool for coaches to share match and training feedback to players. On the PMA application the researcher created a bespoke reflection section which required the players to re-call on a specific moment of pressure within their previous fixture, their perception of the cognitive and somatic symptoms within this pressure moment, the direction and future strategies to employ if they were to have that moment repeated. Players were prompted to use this tool following the completion of their match day performance. Players were reminded at the end of their CB workshop and coaches were also asked to prompt players following competition and within their performance analysis sessions, where they have computer availability at the soccer club. By understanding the players thought patterns, the researcher could also use this information to establish any changes in appraisal of pressure and use of psychological skills taught from workshop sessions (Beck, 1995).

Example questions used in the reflective log's included:

Describe a moment in the game where it was important for you to perform at your best.

If you were to face a similar situation again, what, if anything would you do differently?

6.4 Data Analysis

6.4.1 Statistical Analysis for Simulation Training

The aim of quantitative analysis was to examine changes in performance under pressure when comparing the baseline to post-intervention simulation performance. A mixed ANOVA was conducted on the player's performance scores for the accumulation of decision making and skill execution.

6.4.2 Reflective Practice

The reflection logs were subject to inductive and deductive content analysis. Participants' responses were coded in NVIVO each heading that represented the questions/instructions in the document. Inductive content analysis involves discovering patterns, themes, and categories in one's data (Patton, 2002) and was deemed more appropriate, particularly within the first section of the reflective practice where soccer players were discussing pressure moments unique to them. The cognitive, emotional, and behavioural responses were then deductively matched to the protective and debilitated factors within chapter four. This provided insight of each participant's experiences and allowed for trends in the data to be identified over the course of the intervention and any transfer to competition.

6.5 Results

Firstly, the statistical evidence examining the effect of the intervention on the performing under pressure across and between age-groups will be tested to assess if players performance under pressure (decision-making x skill execution) enhance to a greater degree than simulation training intervention delivered independently. Secondly, the findings from the reflective practice diaries will be presented to assess any change in players' ability to utilise psychological skills to facilitate performance under pressure within competition.

6.5.1 Pressure Manipulation

Evaluations of pressure were necessary to determine if the chosen performance task(s) can help validate the effectiveness and efficacy of interventions by ensuring that a performance task recreates the characteristics of pressure, such as a meaningful task (Kent *et al.,* 2018). Retrospective evaluations of pressure interventions were used post-pressure testing to explore players' perceptions of pressure that was induced within the testing. Players chosen for interview from each age group (n = 16) were selected on the following criteria; highest mean score across testing, lowest mean score across testing, biggest improver from pre-test to post test and least improver from pre-test to post- test citing; Presence of competition (*physical, opposition, league table*); *Self-orientated (own expectations)*; *Tangible incentives (consequences, rewards)*; *Presence of others (noise, coaches' peer observation)*; *Time (one opportunity to score, decision-making).* The presence of others which included parents and senior coaches were not discussed as incentives to perform optimally. Physicality and opposition were not cited by any 17-18 aged players. Opposition and noise was not cited by any of the 15-16 aged players. The reward was not mentioned as an incentive by 13-14 aged players. One under 14 player discussed how the perceived pressure did reduce across the testing '*in the first one it was more of the 8 (out of 10) and then the second one it went down cos I was quite high up the leader board and I felt more relaxed.'* Two under 15 players discussed how the lack of senior staff made it '*feel like a normal training session.'*. Two under 18 players discussed the belief that consequences and rewards of performance would not be administered by coaches' due to their body language and the severity of consequence. Pressure was manipulated successfully, however there did appear to be evidence that players ages 11-14 perceived higher levels of task meaning and importance to perform optimally in comparison to players ages 15-18.

6.5.2 The effect of simulation training, cognitive behavioural workshops and reflective practice on performance under pressure.

Due to either injury, illness, match fixtures or recovery sessions a number of players did not complete the simulation training across conditions and were not included within the analyses. The missing data comprised of 11-12; *n =6; 13-14; n =6; 15-16; n =2*. Participant details are presented in tables 5 and 6.

Table 5. Players participating within the intervention group (simulation training x cognitive-behavioural workshops and reflective practice).

	Age-group	Simulation one (Baseline)	Simulation Two	Simulation Three
Intervention group	11-12	11	11	5
	13-14	9	9	5
	15-16	1	1	1
	17-18	3	3	-

Table 6. Players participating within the control group (simulation training only).

	Age-group	Simulation One (Baseline)	Simulation Two	Simulation Three
Control group (simulation only)	11-12	9	9	7
	13-14	5	5	3
	15-16	4	3	4
	17-18	9	9	-

Due to cell sizes being

small for 13-18 years, within the 'time' at the level of 'simulation training two', only age group 11-12 years of age was analysed across the complete three time points; baseline, simulation training one and simulation training two. To maximise the use of the complete data available, further analyses were conducted across all age groups (11-18) with time points of baseline and simulation training one

6.5.3 Inter-Rater Reliability of Simulation Training

Prior to analyses the inter-rater reliability between coaches was tested. The kappa statistic was used to assess the reliability of each coach (<0 less than chance agreement, .01-.20 slight agreement, .21- .40 fair agreement, .41 - .60 moderate agreement, .61- .80 substantial agreement and .81-.99 almost perfect agreement, Landis & Koch, 1977). Two coaches from each age group who took part in the pressure testing analysed five balls to assess inter-rater reliability for accuracy for each age group (11-12; k= 0.68; 13-14; k = 0.83; 15-16 k = 0.39). Inter-rater reliability represents the extent to which the data collected in the study are correct representations of the variables measured. McHugh (2012) suggested that kappa scores below k= 0.41 are unsatisfactory, subsequently the influence this may have on the scores of the 15-16 must be considered.

6.5.4 Descriptive Statistics

6.5.4.1 Descriptive Statistics for Players Aged 11-12 Years

The quantitative data observed demonstrated an increase in player's ability to perform under pressure (*decision-making x skill execution*) but it was not statistically significant. However, from simulation training two, to simulation training three player's performance under pressure decreased for both intervention and the control group.

Player's decision-making under pressure improved for both intervention (M = 1.05(SD=0.38*)* to M=1.16 (SD =0.50) and control (M= 0.99 (SD= *0.17)* to M = 1.36 (SD=

0.76) from baseline to simulation two. Improvement in performance appeared to be greater for participants within the control condition. However, between simulation two and three participants in both the intervention (*M = 1.16 (SD= 0.50)* to *M= 0.95 (SD= 0.24)* and control (*M = 1.36* (*SD= 0.76)* to *M =* 0.88 (*SD = 0.16*) conditions decreased in performance.

Player's skill execution under pressure improved for only the intervention group (*M =* 0.98 (*SD = 0.37)* to *M =*1.14 (*SD = 0.53*). Mean scores for player's skill execution for the control group marginally decreased (*M =* 1.10 (*SD = 0.37)* to *M =* 1.07 (*SD = 0.55*). Between conditions simulation two and three both intervention (*M = 1.14* (*SD = 0.53)* to *M = 0.96 (SD = 0.24)* and control (*M = 1.07 (SD = 0.55)* to *M =* 0.85 (*SD = 0.30*) conditions decreased in performance from simulation two to simulation three for the intervention and simulation only.

6.5.4.2 Descriptive Statistics for Players Aged 11-18 years

Player's mean score within the 11-12 age group and 13-14 age group improved their improved their performance under pressure (*decision-making x skill execution*) from simulation one to simulation two within both decision making and skill execution for both intervention and simulation only but this trend was not statistically significant. Player's ages 15-16 participating in intervention *(M*= 1.73 (*SD= 0.82)* to *M= 1.27*(*SD= 0.48*) or control group (*M*= 1.32 (*SD= 0.42)* to *M =* 1.24 (*SD*= 0.26) reduced in their decision-making under pressure from simulation one to simulation two. Similarly, player's ages 17-18 decision making under pressure decreased from simulation one to simulation two in both intervention (*M*= 1.73 (*SD= 0.85)* to *M*= 1.60 (*SD= 0.20*) and control group (*M*= 1.62 (*SD= 0.41)* to *M*= 1.31 (*SD= 0.26*). However, player's ages 17-18 within intervention (*M*= 0.93 (*SD= 0.25)* to *M= 1.57 (SD= 0.21*) enhanced their execution of skill under pressure in comparison to the

control group where the execution of skill reduced *(M*= 1.13 (*SD*= 0.33) to *M*= 1.24 *SD*= *0.30*).

Table 7. (*Part one)* Mean and Standard deviation scores for the decision making of academy player's

Age Group	Intervention			Control group (simulation only)		
Decision Making	Simulation One (Baseline) Mean (*SD*)	Simulation Two Mean (*SD*)	Simulation Three Mean (*SD)*	Simulation One (Baseline) Mean (*SD*)	Simulation Two (*SD*)	Simulation Three Mean (*SD*)
11-12	1.05 (0.38)	1.16 (0.50)	0.95 (0.24)	0.99(0.17)	1.36 (0.76)	0.88 (0.16)
13-14	1.30 (0.25)	1.46 (0.55)	-	1.28 (0.37)	1.48 (0.34)	-
15-16	1.73 (0.82)	1.27 (0.48)	-	1.32 (0.42)	1.24 (0.26)	-
17-18	1.73 (0.85)	1.60 (0.20)	-	1.62 (0.41)	1.31 (0.26)	-
Total	1.45 (0.41)	1.37 (0.43)		1.30 (0.34)	1.35 (0.4)	

Table 7. (*Part two*). Mean and standard deviation scores for academy player's skill execution

Skill Execution						
11-12	0.98 (0.37)	1.14 (0.53)	0.96 (0.24)	1.10 (0.37)	1.07(0.55)	0.85 (0.30)
13-14	1.12 (0.33)	1.18(0.64)	1.03 (0.22)	1.08 (0.46)	1.28 (0.27)	0.98 (0.35)
15-16	1.40 (0.43)	0.75 (0.45)	-	1.11 (0.30)	1.08 (0.27)	-
17-18	0.93(0.25)	1.57 (0.21)	-	1.13 (0.33)	1.24 (0.30)	-
Total	1.11 (0.35)	1.16 (0.46)		1.11 (0.37)	1.17 (0.35)	-

6.5.5 *Parametric Analyses*

A 2x2x4 (for participants aged 11-18) mixed ANOVA was applied; there were two between- subjects factors; age, intervention participation, and one within subjects factor, time. Age was on four levels; 11-12, 13-14, 15-16 and 17-18 years of age. The cognitive intervention was split into two levels; intervention group (simulation training, cognitive behavioural workshops and reflective practice) or simulation training alone, and time was on two levels, simulation training one and two. Due to cell sizes being small and there being a large amount of missing data for 13-18 years, a further analysis was conducted to maximise the use of available data for simulation three in the 11-12 year group. A 2x2 ANOVA was

conducted to analyse the effect of the complete three time points; simulation training one, two and three, and intervention group on the dependent variables. There were two dependent variables and so separate analyses were run for each. These were; skill execution and decision making.

6.5.5.1 Testing for assumptions

Prior to the analysis of the ANOVA it was important to ensure that data met the assumptions of ANOVA testing. First, the dependent variables (decision-making/ skill execution) were measured at the continuous level. Independent variables of age, time and intervention consisted of two or more categories. Players were split randomly into a control or intervention condition, which allowed for independence of observation. Participants were marked on their performance on a 1-3 scale and subsequently scores were aligned to that players performance, there was no individual that scored 'unusually' (e.g. full-marks, or no-marks). In order to test homogeneity of variance Levene's test (1960) is an inferential statistic used to assess the equality of variances for a variable calculated for two or more groups. If $p > 0.05$, equal variances can be assumed (Levene, 1960). Levene's scores for skill execution 11-18 ($p = .93$) during the baseline testing were not met. All Levene's scores across 11-12 decision-making and execution of skill were not met; decision-making; baseline ($p = .067$), simulation one ($p = .37$), simulation two ($p = .42$); skill execution; baseline ($p = .72$), simulation one ($p = .90$) ($p = .74$). This maybe a result of the unequal group sizes across age-groups and the unequal group sizes for those who participated within the intervention group (workshops) in comparison to the control (simulation). If group sizes are vastly unequal and homogeneity of variance is violated, then the *F* statistic will be biased when large sample variances are associated with small group sizes (Field, 2009). When this occurs, the significance level will be underestimated, which can cause the null hypothesis to be falsely rejected. This is important to note when interpreting the statistical results of this data.

6.5.5.2 Effect Sizes

Traditionally, a researcher makes an inference by declaring the value of the statistic statistical significance on the basis of a P value. Within ANOVA analysis the statistical power of obtaining a significant interaction is lower in comparison to larger samples. Therefore, an outcome statistic with $P < .05$ could represent an effect that is irrelevant or imply that there is no worthwhile effect, because a combination of small sample size and large measurement variability can mask important effects. Within an elite sport setting this approach could be misleading due to the small sample available to researchers.

Additionally, within sport, Hopkins (2018) argues about the context of meaningful changes, and that how 1% change within a clinical setting maybe trivial but within an elite sporting setting this can be important and meaningful. The more relevant issue within an elite context is not whether there is an effect but how big it is. Subsequently, the P value alone provides us with no information about the direction or size of the effect or, given sampling variability, the range of feasible values. Moreover, it was important to assess the mean results of the intervention alongside the ANOVA analysis. The Eta^2 is also presented as captures the variance associated with or accounted for by each of the main effects, interactions, and error in an ANOVA study.

6.5.6 Decision-making for Players ages 11-12

The first ANOVA was performed with the 11-12 years sample. A mixed two-way ANOVA (2x2) was applied to assess changes in performance under pressure (decision making) over 'time' from simulation training one, simulation two and simulation three players aged 11-12 years, comparing those who received simulation training coupled with a CB intervention and those who received simulation training only (control group). There was no significant main effect of time [$F(2,14) = 3.3$, $p=.05$, Partial $Eta^2 = 0.19$] or intervention

[*F(1, 14*) = 0.03, *p*= .86, Partial Eta^2 = *0.00*] on players' decision-making scores. There was also no significant interaction effect of players decision-making and intervention participation over simulation one, two and three [*F(1, 14*) = .12, *p*= *.74*, Partial Eta^2 = *0.1*].

6.5.6.1 Visual Statistical Description of Players' Decision Making Ages 11-12

A positive linear increase for participant's decision-making under pressure within the control and intervention group. However, the graphical line is steeper within the control group in comparison to players who received the intervention. Within the simulation two to simulation three the graph demonstrated a negative linear decrease within both groups. However, this line demonstrated a greater decline in before for those individuals within the simulation only training group.

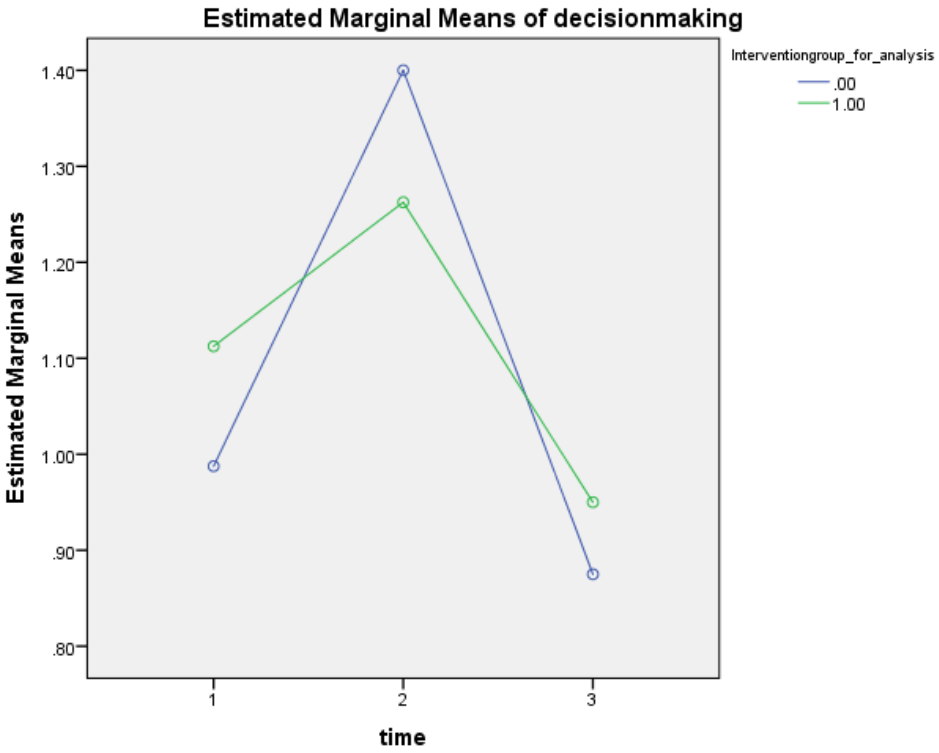


Figure 9. Representing players (ages 11-12) decision-making under pressure across simulation one, two and three.

6.5.6.2 Decision Making Across the Sample Ages 11-18

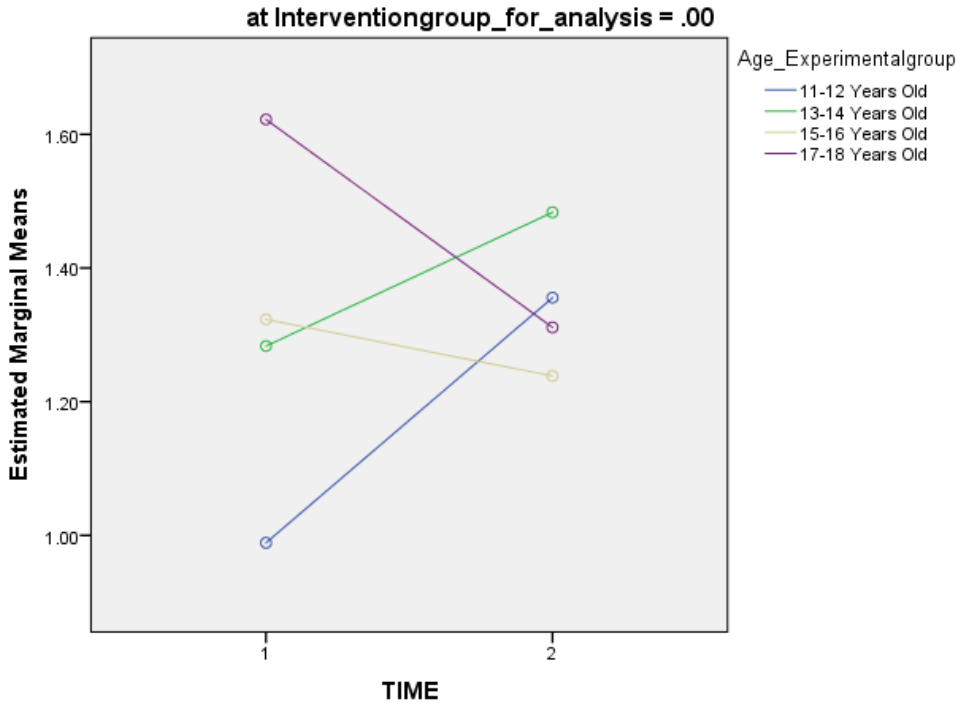
A second ANOVA was performed with the whole sample. A mixed three-way ANOVA (2x2x4) was applied to assess changes in performance under pressure (decision making) from baseline to simulation training one to simulation two for players, comparing age categories, those who received simulation training coupled with a CB intervention and those who received simulation training only, and comparing

There was no significant main effect of time [*F (1, 58*) = .07, *p= .79,* Partial Eta $^{2=}$.01] or intervention [*F(1, 58*) = .86, *p= .36.* Partial Eta$^{2=}$0.02] on players decision-making. However, there was a significant effect of age upon players decision making under pressure [*F= (3, 58*) = 3.6, *p= .02,* Partial Eta $^{2=}$0.16] on players' decision-making. Specifically, there was a trend towards higher scores in the higher age ranges.

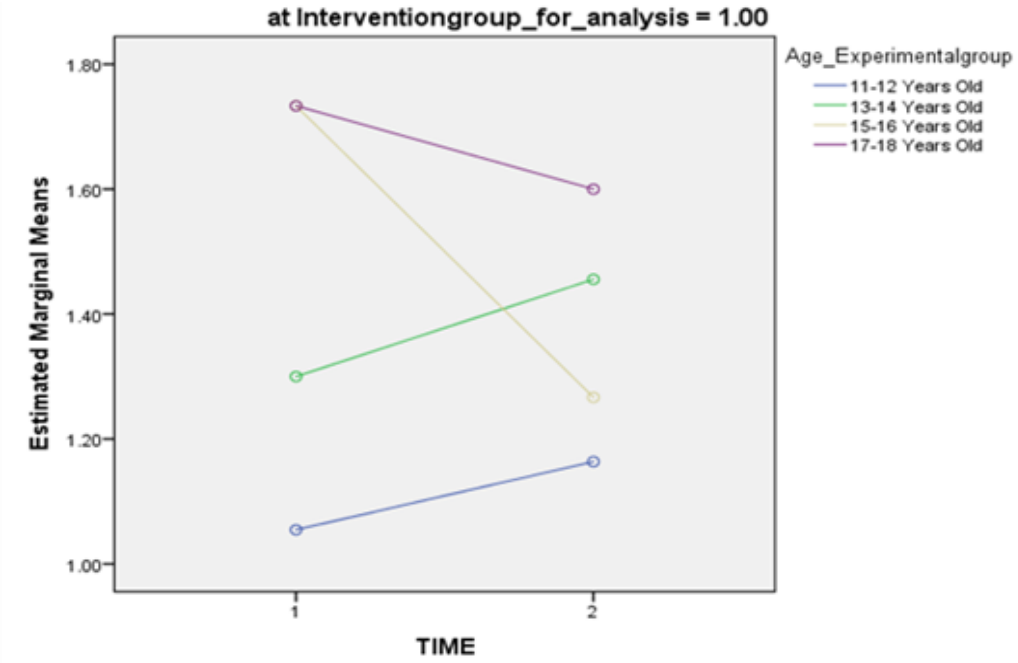
There was a significant interaction effect of age x time upon decision making [*F= (3, 58*) = 3.2, *p= .03* Partial Eta $^{2=}$.15]. There were no significant two way interaction effects of time x intervention [*F=(1, 58)= .66, p= .42,* Partial Eta $^{2=}$.01]. There was also no significant three-way interaction effect of time x age x intervention on players decision making under pressure [*F=(3, 58*) = .56, *p= .65,* Partial Eta $^{2=}$.03].

6.5.6.2.1 Visual Statistical Description of Players Decision Making Ages 11-18

As represented within Figure 9 there were mixed findings for intervention effectiveness across age groups. Age groups 11-12 and 13-14 demonstrated positive linear improvements. In contrast players aged 15-18 displayed negative linear performance under pressure in both intervention and control group conditions.



Control group (Simulation only)



Intervention group (Simulation, cognitive-behavioural workshops, reflective practice)

Figure 10. Representing player's ages 11-18 decision-making under pressure in the control group and intervention group across simulation one and two.

6.5.7 Skill Execution for Players Aged 11- 12 Years

A mixed two-way (2x2) ANOVA was performed with the 11-12 years sample to assess changes in performance under pressure (skill execution) over 'time' from simulation training one, simulation two and simulation three. The analysis aimed to compare those who received simulation training coupled with a CB intervention and reflective practice to those who received simulation training only.

There was no main significant effect of time [*F (2,14*) = 1.87, *p*= .17, Partial Eta ^{2}=.18] or intervention on players execution of skill [*F (1, 14*) = .13, *p*= *.72*, Partial Eta ^{2}=. *01*]. There was no significant interaction effect for time x intervention [*F (2, 14*) = 1.02, *p*= *.33,* Partial Eta ^{2}=.07] on skill execution.

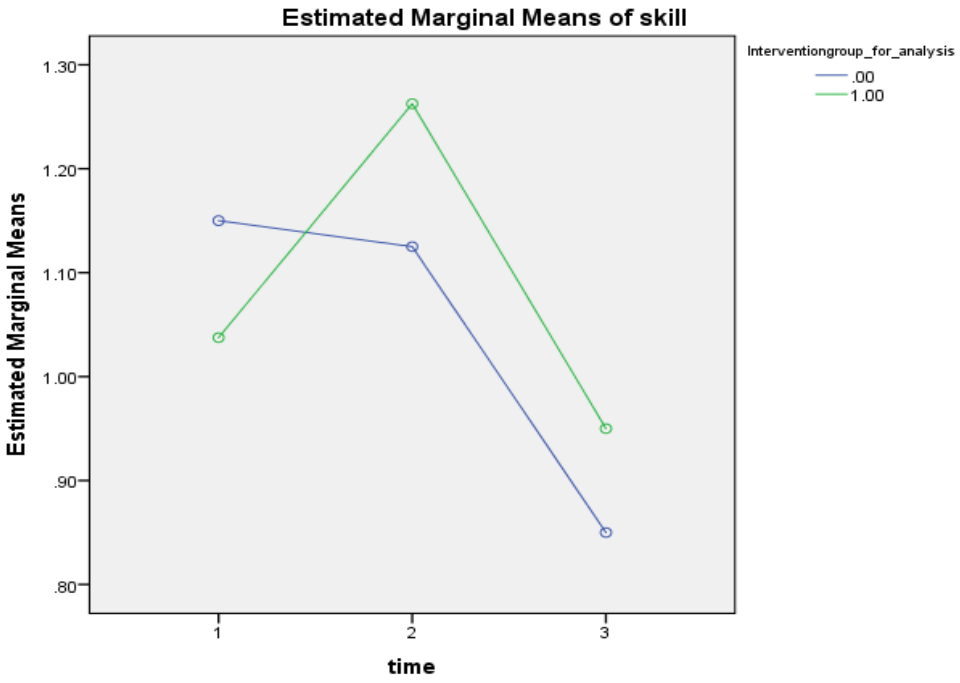


Figure 11. Representing players (age 11-12) execution of skill under pressure across simulation one, two and three.

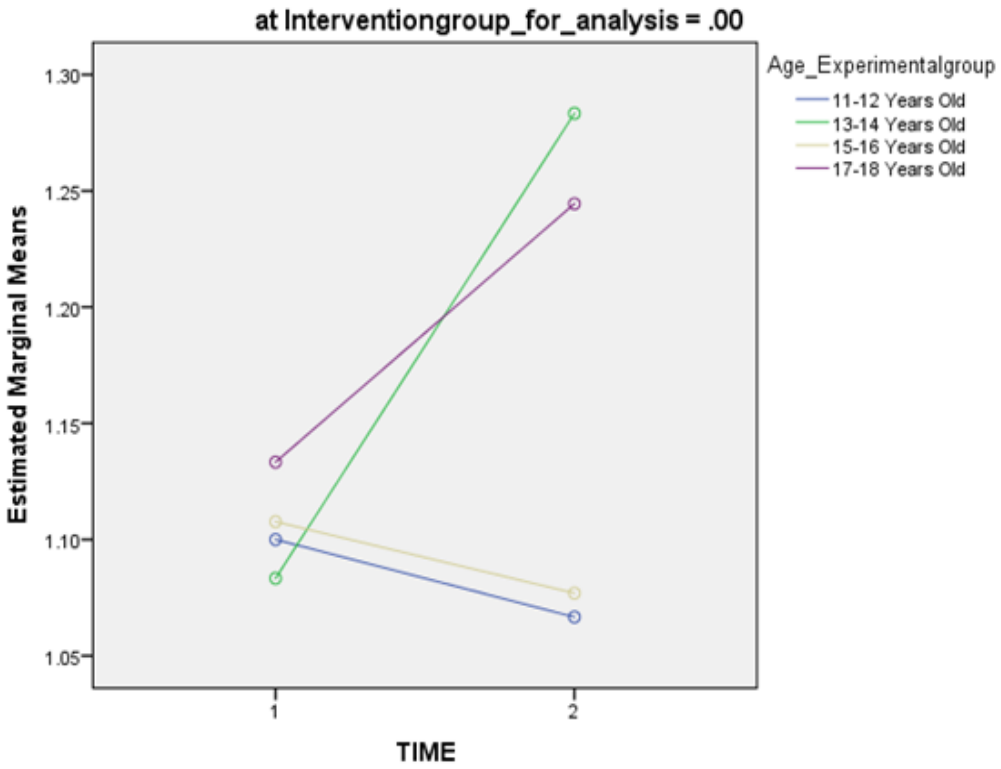
6.5.7.1. *Visual Statistical Description of Players Skill Execution for Ages 11-12*

A positive linear increase was identified within Figure 9 for participants' execution of skill under pressure within the intervention group, in contrast to the graphical line of the control group which is marginally negative. Simulation two to simulation three the graph demonstrated a negative linear decrease within both groups. However, this line demonstrated a greater decline in before for those individuals within the simulation only training group.

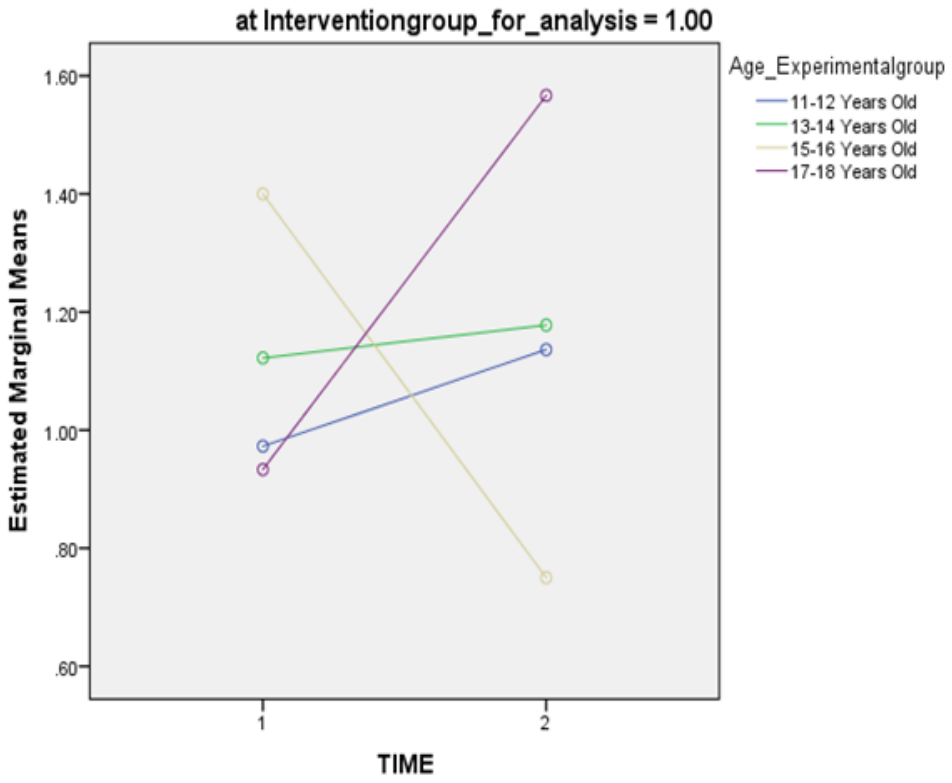
6.5.7.2 Skill Execution across the sample 11-18

A second ANOVA was performed with the whole sample. A mixed three-way ANOVA (2x2x4) was applied to assess changes in performance under pressure (skill execution) from simulation one to simulation two for players aged 11-18 years. There was no significant main effect of time [$F\ (1, 58) = .52$, $p = .47$, Partial Eta $^{2=}.009$], intervention [$F\ (1, 58) = .004$, $p = .95$ Partial Eta $^{2=}.00$], or age [$F\ (3, 58) = .81$, $p = .49$. Partial Eta $^{2=}.04$] on players execution of skill under pressure.

There was also no significant interaction effect of time x intervention [$F\ (1, 58) = 0.05$, $p = 94$. Partial Eta $^{2=}.0$], or age x intervention [$F\ (3, 58) = .06$, $p = .98$, Partial Eta $^{2=}.003$]. However there was a significant interaction effect of age x time upon performance [$F\ (3, 58) = 3.45$, $p = .022$, Partial Eta $^{2=}.152$].



Control group (Simulation only)



Intervention group (Simulation, cognitive-behavioural workshops, reflective practice)

Figure 12. Representing players (ages 11-18) execution of skill under pressure in the control group and intervention group across simulation one and two.

6.5.7.3 Visual Statistical Description of Players' Execution of Skill for Ages 11-18

Figure 10 demonstrates a positive linear increase in player's skill execution under pressure for players 11-12, 13-14 and 17-18 for players who participated within the intervention group. In comparison only players ages 13-14 and 17-18 demonstrated a positive increase in performance after participating only within simulation training. Negative linear performance occurred for players ages 15-16 within both the control and intervention groups.

6.5.8 Summary of Quantitative Analysis

The ANOVA analysis captured only a significant statistical interactive effect of age. Subsequently, the differences between age- groups on the effectiveness of intervention and control groups is certainly meaningful and important for applied practice. However, no significant statistical differences between the intervention and control groups were identified on any of the performance measures this could be, at least in part, due to the relatively small sample size. Subsequently, in trying to apply findings of empirical investigations to the real world of sport competition, it is important to consider the visual graphical representation of the data and effect sizes. This does not mean that statistical significance should be discarded or deemed irrelevant, but it is important that applied research is not strictly bound by statistical significance.

In examination of the graphical evidence, Figure 6 and 7 demonstrates mixed results for the effectiveness of simulation training and the intervention on players decision-making (DM) and execution of skill (SE). Only age groups ages 11-12 and 13-14 demonstrated improvements in both DM and SE following participation within the intervention. There was

19% variance in the decision-making of players ages 11-12 over the course of the study but there was no effect of this being attributed to participating within the intervention. This would suggest that over time players improved their ability to execute decisions under pressure with simulation training alone. Similarly, there was 17% variance in players ages 11-12 execution of skill over time with 1% being attributed to the intervention.

However, when examining the main effects of players ages 11-18 decision-making 2% of variance occurred for players participating within the intervention group, with 16% variance across age groups. The 'noise' that may occur through the data collection process would suggest that a 2% additional increase in decision-making is meaningful (Hopkins, 2018). Similarly, players ages 11-18 execution of skill improved by 7% over time with 4% of variance occurring across the age-groups but with no significant effect of this being attributed to participating within the intervention. The effect sizes suggest that over time players performance under pressure (decision-making x skill execution) improved, however the main effects of the intervention could be influenced by the interaction between-age group factors such as age.

6.6 Reflective Practice

The players were asked to complete the reflective practice task over a six -week cycle (total of three games). The reflective practice diaries provided an insight into developing coping related competencies and any development in players' ability refine coping skills over the course of the intervention. In monitoring the impact of an intervention on coping effectiveness, a prospective research design is desirable as it allows researchers to more completely capture the coping process (Lazarus, 2000). This section will explore the content of those diaries, and any changes across the six-week cycle.

Table 8. Number of players and the number of times reflective practice was completed within the six-week cycle

Age group	Number of completed reflective practice diaries per game		
	Game One	Game Two	Game Three
11-12	4 / 11	0 / 11	5/ 11
13-14	4/ 9	2/ 9	4/ 9
15-16	1/1	1/1	1/1
17-18	0/ 3	0/3	0/3

6.6.1. 11-12 Years of Age

Players described both unhelpful (e.g., agitated) and helpful emotions (e.g., energized) throughout their reflective diaries. Helpful emotions within the diaries players were typically reported as 'calm' and 'relaxed' as players believed this enabled them to focus on task processes. There was partial evidence of players engaging in 'reflection in action' and using their previous reflections to aid their next performance. For example, one player described how feeling 'nervous' was unhelpful because his focus was on 'l*osing*' and '*getting the blame'* for mistakes which was a distraction from executing decisions. However, another player did cite unhelpful self – talk but discussed how a re-appraisal strategy taught in the workshop which was also underpinned by the vicarious experiences of first team players helped performance *'I was nervous but then I started thinking positive and focusing knowing this was a good opportunity like Danny Bath and not thinking like Rudy.'*

Development of emotional intelligence development was established where players began to unpack the influence of emotion upon performance. For example, '*I need to be calm because I can focus more'* and to achieve this this player discussed executing a process to gain control over the game and '*by slowing down the tempo'*. This player reflected and articulated:

'If you were to face a similar situation again, what, if anything would you do differently?*'*

'*I would try to relax on the ball and to build my confidence and positive thoughts up I would try some skills that I know I could do within training.'*

A potential limitation of intervention effectiveness was captured in players who remained to perceive '*pressure*' as an unhelpful construct with only one player citing how '*a tiny bit of pressure'* helped him focus and motivated for performance.

6.6.2 Under 13-14 years of age

Within their reflections players typically referred to the appraisal of pressure as a facilitative construct which enabled players to be in the ideal performance zone and made reference to unconscious processes' i.e. 'don't think just do approach' which facilitated performance under pressure. For instance, one player mentioned how he '*didn't want second thoughts'* which aligned with the themes of workshop two '*trusting in your first decision'*. Players within this age phase also discussed greater elements of emotional intelligence development. For instance, one player within his exert identified how being over energized caused him to rush his performance. Following his next game discussed how to regulate his emotion by focusing on executing his strengths, for example, high-speed running following errors (workshop two).

6.6.3 Under 15-16 years of age

Players demonstrated an increase in their ability to recognise how appraisal of pressure could facilitate performance under pressure through the relationship between emotion, focus and confidence: *'When I had a good touch, I needed to compose myself for the shot so that I could have a good chance of scoring…these thoughts were helpful as I had confidence.'*

Players described a range of pressure situations and were able to identify and describe their ideal performance state. For example, the below player reflected on his desired emotional state in greater detail in comparison to the previous age groups and how pressure could energise performance: *'when we were losing or when the game was tight, my thoughts were to produce something and keep performance levels high that was helpful as it gave me more energy.'*

To regulate emotion in performance the reflective practice extracts identified that players meta-cognition had developed and their ability to articulate and understand their thought process had improved from each extract. However, players predominantly described maintained the link to behaviour (technical or tactical performance), rather than any of the potential psychological strategies to regulate unhelpful emotions or attentional focus.

6.7 Qualitative Evaluation of the Intervention

The effectiveness of the intervention and simulation may be explained through the qualitative interviews of players, parents and coaches. All participants data will be presented together with a sample of quotes from the interviews and reflection extracts that best represent the thoughts of the participants have been taken. Finally, within the third part coaches and parents' perceptions of the effectiveness of the pressure intervention will be examined.

6.7.1 Method

A total of 16 players, (n = 4; each age group) who scored the highest score, lowest score, greatest improvement (pre-test to post-test) and least improvement (pre-test to post-test) across simulation training were asked to participate within the post intervention interviews. Coaches' (n = 11) and parents (n = 10) of the selected interviewed players were contacted to also participate within the post intervention interviews. Parents of the players from the under 18 age group were not asked for interview due to a large majority of the players living away from their home location with host families. The interviews were transcribed verbatim and NVivo-2 (Thousand Oaks, CA, USA, 2002) was used to facilitate coding.

6.7.1.1 Design – Qualitative

The researchers' intentions for the present study were to further develop understanding of the practicalities and necessary considerations for adopting pressure training. Individual interviews were undertaken with players, coaches' and parents to discuss the perceived psychological and/or performance benefits of engaging with simulation training or simulation training alongside CB workshops The purpose of the study was to gain understanding of the role and potential benefits/ pitfalls of engaging within pressure training within elite academy soccer. In order to do so, it was deemed most appropriate to obtain the qualitative perceptions of players who had experienced a significant improvement, thrive under pressure, significant lack of improvement and poor performance under pressure. Additionally, obtaining the perspectives of the intervention through players coaches' and parents provided an additional insight into performance effectiveness, the practicalities and necessary considerations for adopting simulation training, cognitive behavioural workshops and reflective practice within academy soccer.

6.7.1.2 Participants

In order to capture the experiences of player's that participated within simulation training or the intervention group the overall top performing, bottom performing, most improved individuals over the duration of the 18 weeks and least improved were interviewed.

All coaches' participating within the assessment of the pressure training protocol were interviewed (*lead coaches; n= 3; assistant coaches; n =4)* who contributed to both the design and testing of simulation training testing were interviewed to investigate their perception of the effect of the simulation training and cognitive behavioural skills workshop on performance. One coach within the under 16's was not interviewed due to leaving the academy.

Parents of the players within the under 11- under 16 were chosen for interview were also contacted (n = 9). Parents 11-12; n = 4, 13-14*;* n = 3, 15-16*;* n= *2.* One parent from the under 13-14's had no phone contact details and did not respond to the email. Two parents from the 15-16's chose to not participate in the interviews. Due to influence of physicality inducing competitive pressure it was also deemed appropriate to interview two sport scientist working with academy age-groups *11-14; n=1; 14-18; n= 1).*

6.7.1.3 Procedure

Interviews were performed face-to-face, tape recorded, and were between 10 and 15 minutes, the interviews took place within the academy one week after the third simulation training had been completed. However, one interview with the lead 18's coach interview was completed three weeks after the simulation training had been completed due to logistical difficulties. Interviews with parents were all conducted on the phone and recorded which lasted between 20 and 30 minutes. The questions were open ended (i.e., prefaced by how? why? in what way?) and probes were used to gain further insights where necessary (e.g., can you tell me more about that?). Players, coaches and parents were all encouraged to articulate

in detail, and from their own viewpoint any emotional, cognitive and/or behavioural outcomes of the intervention they had experienced and whether simulation training alone or ST in combination with CB had differing influences on their ability to perform under pressure.

6.7.2 *External Evaluation from The Premier League Coaches Conference*

The Premier League conference invites coaches from all Premier League and Category One academies (approximately 160 to 170 coaches) to an annual conference. The intervention was outlined at this conference with a view to gathering feedback. The aim of the session was to provide coaches with an understanding of what performance pressure is, how we can help prepare players for pressure, and the practical considerations for pressure training. Following this session 15 minutes was designated to coaches evaluating and asking questions about the simulation training and intervention. This session was audio recorded and analysed to ascertain the main points of evaluation from this professional group.

6.7.3. Method of Analysis

Interviews from players, parents and coaches were transcribed verbatim and read several times to gain familiarisation. The interview data were analysed through deductive content analysis in which raw data quotations/phrases were extracted from the transcript, providing pertinent examples of the perceived effect of cognitive behavioural workshops or simulation training on players' decision making and skill execution under pressure. Deductive content analysis involved analysing the data according to the framework established within chapter four (Patton, 2002). A specific emphasis was made to code for when a player explicitly discussed either simulation, cognitive-behavioural workshops or reflective practice within isolation for example '*the workshop because you learned how to cope with bad thoughts'*.

The aim of the study was to investigate whether CB workshops and reflective practice may offer a greater influence upon performance, in comparison to simulation training alone. Subsequently, capturing sub-themes discussed by participants may offer a greater depth of detail to the perceived mechanisms of change. Raw data quotations were deductively coded in line with study one (chapter five) description of protective and debilitative themes. This framework allowed for trends in the data to be identified and placed into overarching codes to represent the participants' experience of the intervention (Patton, 2002). During the analytical procedure, bracketing was employed to ensure that the assumptions and predispositions of the subject material may have and setting them aside to avoid them unduly influencing the research outcomes (Giorgi and Giorgi, 2003). Transcripts with the emergent codes/categories were sent to the participants for member checking. Within the content analysis, the actual verbatim descriptions used by each participant to elicit these factors were included.

6.8 Narrative Discussion of Findings

From the 16 players interviewed, three over-arching themes regarding the perceived effectiveness from the simulation training across all academy age-groups which were; *emotional control, meta-cognitive skill and confidence*. Perceived effectiveness from the group attending both simulation training and cognitive workshops across all academy age-groups also discussed the development of *meta-cognitive skills*. (see Table 5 and 6). The next section will discuss the proposed mechanisms of change in accordance to players perception of intervention effectiveness.

Table 9. Perceived effectiveness from the intervention group attending both simulation training and cognitive workshops across all academy age-groups

Perceived developed attribute	Sub-theme
Confidence	Coping efficacy
	Reinforcing current use psychological strategies
	Preparation
	Future coping planning
Emotional intelligence	Understanding their emotions
Meta-cognition	Understanding how thoughts impact emotion and performance
	Increased ability to recognise and correct unhelpful self-talk
Motivation	Increased persistence, effort and enjoyment of pressure
Focus	Recognise effective movement patterns
	Speed of decision-making
	Execute performance with reduced touches
	Improved attentional focus
Challenge Appraisal	Perceiving pressure as an opportunity / development tool

Table 10. Perceived effectiveness from the simulation training only across all academy age-groups

Perceived developed attribute	Sub-theme
Confidence	Trusting in first decision/ and belief of executing skill
	Coping with future pressure
Emotional intelligence	Re-appraisal of emotion
	Understanding of emotions
Motivation	Increased persistence, effort and enjoyment of pressure
Focus	Recognise effective movement patterns
	Speed of decision-making
	Execute performance with reduced touches
	Improved attentional focus

Confidence

Players discussed a development in higher levels of personal control and confidence to execute decisions and skills with higher levels of precision and automaticity. As a result of simulation training some players discussed enhanced confidence to perform under pressure based upon their performance during simulation training. Specifically, some players discussed how their performance could reduce uncertainty to perform effectively under pressure for example this under 13 player discussed *'it [simulation] takes pressure off you*

when you come to games, because you know you can cope with it because you've done it before and you're used to the noises.'

An increase in confidence was noted by some players as a result of future-oriented coping. Future- orientated coping was captured in players' responses who discussed how the intervention increased their ability to anticipate, plan and prepare to perform under pressure. The below extract from this under 12 captures interactive effects of providing cognitive behavioural workshops alongside simulation training on confidence:

> Player 1 (age 12) '*Self-belief…because I wasn't very confident but then when we did the workshop things like what would you do differently I performed much better in the second pressure testing and like I've um been more confident in myself... I started to try things and believe in myself and that made me do more points.*'

Simulation training alone was also discussed by players to facilitate confidence through future orientated coping, particularly discussing the perceived preparation to cope with time pressure and belief to enhance precision and execute optimal tactical decisions at a greater speed:

> Player 3 (age 15) *'Because like you've got to be as fast and think as fast as other people… you can only take a few touches so this like helps to learn to do it quick in training or learning the maths so you can do it quick in a game.'*

Emotional Intelligence

Emotional intelligence development was derived from both simulation and cognitive behavioural workshops. Simulation training was a useful method players believed enabled them practice strategies to managing emotions. Additionally, some players described how understanding the influence of pressure on emotions assisted players in understanding different strategies to control emotions. For example, this under 11 player described:

'*I think it [workshops] has like quite a lot because before I used to not be able to control like my emotions as well but now but I think practising in pressure training [simulation training] I've got better and I don't get as frustrated anymore.'*

Meta-cognition

Players' discussed an increase in meta-cognitive skills which was cited by players to increase their ability to control emotions which enabled them to '*learn to relax more'*. Cognitive behavioural workshops were discussed by some players to develop their understanding of what pressure is particularly, the '*small games helped teach us about what pressure is'*. By developing an understanding of what pressure is, players were able to reflect on what coping strategies they currently use. Guidance in recognizing, and '*give us information on how to deal with pressure.*' were beneficial for players. Particularly, the use of first team player's interviews within the workshops was particularly important in developing a player's meta-cognitive skills where one under 18 players '*felt like we had to deal with pressure we wasn't like alone cause even players that play professional, deal with pressure as well*.'

Understanding how self-talk could influence performance enabled some players to main focus on their task performance and the ability to block external distractions. The under 14 player in the quote below describes how experience of noise within training developed his ability to maintain focus on task related processes':

*Player 2 (*age14*): 'It [simulation] helped me during like the derby games, you knew how to handle your thoughts like when all the parents were like shouting and all that sort of stuff and you know you could block out noise and stay calm and just handle it better.'*

The reflective practice tasks were also discussed by players to increase their meta-cognitive skills by encouraging players to recognise unhelpful thoughts/self-talk and understand the emotion and behaviour relationship:

> Player 1(age 13): *'Like in the box where it said what would you do next time (reflective practice task) …my decision making is not that good at times it helped me think about what I could have done better…not panic with the ball and to enjoy it.'*

However, some players discussed the difficulty in transferring the cognitive behavioural workshops the competitive context and no discussion of using the simulation text to practice any meta-cognitive challenges because '*you don't really think that things like that come really into my head when I'm playing a game*.'

Challenge appraisal

Players discussed how simulation training offered an isolated perspective of understanding pressure. Following simulation some players reflected on their performance and could relate to particular coping methods they used within the simulation to the transfer into their games, particularly re-appraising pressure as a motivational tool to aid performance:

> Player (age 11) '*I think the pressure testing helped me a lot in the games as it helped me work harder… that's what works for me under pressure so I know what to do when I'm pressured.'*

No perceived benefits

It is important to highlight that some players did not identify any perceived benefits from the simulation training and intervention. Particularly, some players described the cognitive-behavioural workshops to repeat strategies that they already knew, struggled to

recall these strategies within the game or confusion in understanding the content. For example, this under 11 discussed '*I found them [*cognitive behavioural workshops*] a bit confusing and hard sometimes'.*

A lack of perceived pressure within the simulation training session and not indicative of pressure. For example, this under 18's player described:

> *'It wasn't really pressure for me because I think the lads already knew before that it [consequences] wasn't going to be carried out… just people thought that it was unlikely you know that you could get dropped just because of the drill [simulation training]'*

6.8.1 Coach and Parental Perception of Intervention Effectiveness

Confidence

Across all age groups, coaches discussed confidence as a particularly important psychological attribute that may have developed as a result of the pressure testing. Confidence from simulation training was perceived to be aligned to the players' performance accomplishments. For example, one under 16's coach discussed the impact of scoring on a player's belief to be successful under pressure within games:

> Coach (Under 16): *'Players were worrying that they were going to get exposed that they weren't good enough…there's going to be a score put on me against player x, y and z…But if he'd scored well, I think it would give him the belief that actually. I'm good, I did all right there, didn't I?... if they believe they are better decision makers, then that in turn will give them confidence.'*

Coaches and parents held similar perspectives in being cautious with the results of the pressure testing and to also consider other components of the soccer experience. For instance, with one parent discussing the impact of confidence:

> *Parent (U11 player): 'He is quite confident at the moment. Erm and I think that's - that may well be because of that… it could be some of the stuff around pressure training absolutely he, he hasn't cited that specifically 'This is why I'm doing well,' but he did mention he'd come, he'd come erm either top or near the top of, of one recently.'*

Meta-cognitive development

Both coaches and parents identified an increase in players engagement within reflective practice which was believed to enhance meta-cognitive skills within training and competition:

> Lead coach (age u12): *'They're developing different coping mechanisms rather than um okay I'm just going to be expected to go and play in a tournament… it's just providing them with those different coping mechanisms and help them understand how their thoughts can affect their performance which is really important for their development.'*

Emotional Intelligence

Both coaches and parents discussed how they believe some players were able to recognise emotions that may facilitate or undermine their performance more effectively. Subsequently, under pressure they were able to maintain performance.

> *Parent (age 14): 'I think they're probably doing a lot more self-reflection, emotionally he had to deal with it and had to come up with ways of dealing with*

pressure and what not…he showed in games he could start to recognise when he got frustrated and handle pressure a little bit more…I believe it came from the work and himself and you know, a combination of those two.

Challenge appraisal

Further to this one parent explicitly cited a development in motivation, effort and challenge appraisal:

Parent (Under 14): *'It was beneficial in terms of pressure during the match…he has a lot of pressure, especially when the team are behind and he said it helped an awful lot in terms of coping with that…also when he was not on the pitch, you know, when he, he had to come off, things like that and he didn't like it. It was about dealing with decisions like that as well'*

6.8.2 Improvements to the intervention from the perspective of coaches and parents

To improve the effectiveness of the intervention both coaches and parents discussed a number of important reflections. First, both parents and coaches believed that greater detail on the aims and objectives of the simulation training would have enabled them to provide better support to players. Greater knowledge and information of the intervention may have better equipped them to better support players but to also ensure they fully understood what coping strategies were used to be successful under pressure:

Parent (Under 11) 'I think that would be the only thing is to say is that I think they need to understand why they came bottom or why they came top. If he's telling you something different fine but I don't think he understood why he finished bottom and why he finished top.'

Coaches also perceived that to further enhance the quality of coping skills then the ability for players to engage in meaning reflective practice was essential, particularly within the 11-14 age groups whereby the coaches believe they '*sometimes struggle to write it down'*. One under 18's coach believed that players ability to reflect this may have stemmed from the coaches' ability to accurately reflect:

> Coach (Under 18*): 'I don't think they (players) understand reflective practice, I don't think the coaches understand reflective practice so I think they'll mirror the coaches and the coaches… football's really good at reviewing I don't think we know how to do it. I think it's very difficult cause if you reflect on something, you're challenging yourself and that's quite difficult.'*

Finally, coaches reported how one specific 'pressure test' (simulation) would not be sufficient to determine how their player may respond to different types of pressure. A core theme that emerged across all interviews was the importance of making testing even more specific to the individuals needs as both a player and a person.

> Coach (Under 16): '*I think it had benefits…I would individualise it and look at the individual and think what works for them. It worked for (name of player). Did it work for certain players? Probably not and that's where we need to probably strip it down a bit and say, 'Right, what does he need?'*

In order to enhance the effectiveness of inducing pressure coaches discussed how consequences could have been increased in severity over time to overcome the reduction of pressure. Similarly, support from key influences may have enhanced the confidence in coaches to administer the consequences to players. Coaches believed that to induce further pressure the match day experience could have replicated better by the use of match day kits and the presence of parents.

Finally, coaches recognised how the lack of presence of senior coaches' undermined the perceived incentive to perform:

> *Lead coach (under 14): 'I said how, what would make it more or how would you feel more pressure? And they actually said 'well if* [name of head of coaching] *was watching me or if [name of under 18 coach] had watched me or* [name of under 23 coach] *was there just quiet not saying anything' then that would add that bit of pressure'.*

6.8.3 *External Evaluation from the Premier League Coaches Conference*

There were three key themes arose from this evaluation pertaining to age, parents and transfer to competition.

Age was discussed as an important component to understand, particularly pertaining to the psychological and social support provided to players. Coaches' discussed the importance of individuals needs within the support following simulation training but understood the capacity to be able to create a completely bespoke and individual approach would be a challenge. Subsequently, by informing coaches' and support staff with more detail they could facilitate better support for the player. Another key reflection was discussed pertaining to the delivery of the intervention within their games programme, one under 18 coach discussed how the physicality of the drill could be problematic when drawing into fixtures. Subsequently, future research could examine when simulation training and the intervention could be most beneficial within players training programme, and across different age-groups. For example, players age 15-16 play fixtures Wednesday evenings in comparison to the under 18's who play fixtures ever Saturday.

Parental support and their influence on the simulation training programme was another key consideration discussed by coaches'. Aligned with the coaches' perspective

during the conference, this study did evoke reaction from parents following the simulation training intervention. Three phone calls were received from parents over the course of the 18 weeks. All three phone calls aligned with the son of the parent last on the leader board and within the 11-12 age group. Subsequently, aligned with this in agreement with the coaches' more transparency could be offered to parents of the course of the intervention to ensure that parent is reinforced in the protocol of the intervention and subsequent support they could provide to assist their son.

Finally, a key interest was objective data to reinforce the findings of the simulation and pressure testing. Although subjective data was provided in terms of the players' perceived psychological development as a result of the simulation training and intervention, coaches' were heavily interested within the transference to competition. Future research could endeavour obtaining performance statistics within pressure moments of the game. However, it is important to consider the extraneous variables that could influence statistics such as opposition, weather, importance of game.

6.9 Discussion

Despite previous literature evidencing a statistically significant relationship between simulation training and sports performance (e.g. Bell *et al.,* 2013) this study did not replicate such findings across all age-groups. The interaction between age and time was the only significant effect on decision making and skill execution under pressure. Findings indicated no statistical significant difference on academy players' ages' 11-18 ability to perform under pressure (decision-making x skill execution) following simulation training or intervention. Findings from the players aged 11-12 where the data were available over three simulation training sessions, also did not established a significant difference in performance over simulation one, two and three for both simulation and intervention.

Although the results indicated no significant statistical differences between the intervention and control groups on any of the performance measures, there was a classic dilemma from the standpoint of clinical (practical) versus statistical significance. Although statistical significance should not be discarded, aligned with the applied and exploratory nature of this thesis it is also important to consider the relatively small sample size. From a practical perspective, the differences between the groups on performance measures were certainly meaningful. The mean results and effect sizes within this study identified that simulation training alone enhanced decision-making and execution of skill under pressure.

Effect sizes suggest that over time players performance under pressure (decision-making x skill execution) improved, however the main effects of the intervention could be influenced by between-age group factors such as age. When examining age groups closely, the performance of players in the 15-16 age groups declined for decision-making and skill execution following simulation or intervention which may have distorted data analysis. Findings from the players aged 11-12 where the data were available over three simulation training sessions, established an improvement in performance over simulation one and two for both simulation and intervention. However, both conditions performance declined within the simulation three. Besler *et al.* (2009) suggested that one explanation for findings such as these could be the number of intervention sessions resulting in a dose effect whereby the amount of pressure players experienced decreased over time. Similar to the present study, Oudejans and Pijpers (2010) identified that positive effects of simulated training occurred from simulation one to re-test. Oudejans and Pijpers (2010) suggested that the reason for the decline in performance identified within this study was a result of the simulation no longer evoking anxiety that generated significant pressure to increase the investment of effort. This would align with the coaches' pressure evaluation whereby they perceived that there was a reduction of perceived pressure across simulation training sessions.

To ensure that the simulation training evoked pressure it was important to capture the relational meaning and construction that the participant assigned to their relationship with the 'pressure' environment (Lazarus, 1998). By utilising qualitative methods, the researcher was also able to evaluate and changes in coping skills and appraisal of pressure (i.e., focus, confidence, and motivation) following simulation training and/ or the intervention. First, within their discourse of perceived incentives to perform players ages 11-14 did discuss a wider range of perceived incentives to perform. In contrast to ages 15-18 where some players discussed a lack of perceived importance to perform, for example players discussing a lack of belief that the coaches' would enforce the consequences or rewards. Aligned with attentional control theory (Eysenck *et al.*, 2007) it is possible that players ages 11-14 may have perceived greater worry about task performance and the attempts to reduce or eliminate the negative effects of anxiety on performance resulted in the investment of additional effort.

Some players noted that taking part in the intervention or simulation programme developed confidence which then increased their trust in ability, focus, and sense of control under pressure. Enhanced confidence can minimise negative reactions to skill errors that lead to self-deprecating cognition as a result of self-consciousness (Masters, 1992) or distraction towards irrelevant performance cues (Dixon, Turner and Gillman, 2016). This aligned with players' discussion who perceived improvement after mistakes to re-gain attentional focus as they believed they could help regain performance standards. Simulation training was also exclusively discussed by players to enhance their confidence to perform under pressure within pressure scenarios in future contexts of professional soccer, particularly due to the crowd noises and league tables. Players described that the exposure to simulation training provided them with an opportunity to practice when exposed to distracting cues, which enhanced confidence in players ability to maintain improvement after mistakes and to re-gain attentional focus and the development of future-orientated coping skills (e.g. knowing when

to apply self-talk). However, some players perceived that the simulation did not change their levels of confidence. This may be attributed to perceived task difficulty and lack of task meaning failing to evoke genuine pressure (Oudejans and Pijper, 2010). Moreover, for players that did not describe the task challenging or meaningful they may not have received such benefit on confidence. Cognitive workshops and reflective practice were also discussed by players to affirm confidence in their current strategies for coping. Such findings aligned with Devonport and Lane (2014) who also identified an enhanced confidence in knowing when and how to apply coping skills from an educational and reflective practice coping programme. Hill *et al.* (2010) suggested that a mechanism by which the intervention may have facilitated self-confidence was improving the ability to ensure the reflection of errors was constructive and meaningful. Subsequently, one explanation for why the findings within age groups 15-18 may have been attributed to the lack of engagement within reflective practice and the late attendance to workshops for players 17-18. The relationship between reflective practice and self-awareness is a common theme that can aid players in their development of coping skills (Huntey *et al.,* 2014). Players not fully engaging or internalising the importance of reflective practice tasks may have limited the transference and learning of skills from simulation training.

Metacognitive skills in the form of monitoring and controlling cognitive processes were discussed by some players to have developed throughout the course of the intervention, particularly the cognitive behavioural workshops. Metacognition is important in decision-making; which would support why player's perceived an increase in their ability to make effective decisions under pressure. Developing metacognitive skills may also facilitate the development self-regulation skills, in particular the processes of monitoring and control, to executive functions and their development such as emotions (Weil *et al.,* 2013).

Players' ability to regulate emotions was believed to be underpinned by player's participation in simulation and/ or cognitive behavioural workshops. Drive theories suggest that pressure can manifest emotions that are designed to temporarily change the way the body is functioning to enable a rapid physical response (Nesse and Ellsworth, 2009). For some, this may be dysfunctional and disrupt performance, but for others the same emotion may benefit performance in particular situations' and increase the ability for individuals to cope with situational demands (Nesse, 1990, p. 284). Simulation training was discussed by players to afford them with the opportunity to experience the emotions manifested by the appraisal of pressure and learn through concrete experience. This would align with developmental psychology which suggests that the most effective teaching styles for adolescents encompass methods that create concrete experiences. Players within the intervention group and of which engaged within the reflective practice task discussed greater stimulation for reflection in-action upon understanding facilitated higher levels of perceived control or understanding of what emotions were most helpful for performance. Enhanced emotional intelligence may allow athletes to manage or perceive their emotions more effectively (Hanton, O'Brien, and Mellalieu, 2003). For instance, anxiety is a common emotion that pressure theory contends to have the potential to disrupt or enhance performance as a result of appraisal of the salient threat (e.g., degree of perceived importance). However, anxiety can be multi-dimensional and should not always be considered to be debilitating to performance if anxiety is perceived by the performer to be a useful motivating force.

The study was designed with scientific rigour in mind, underpinned by a systematic review and a contextualised understanding of the incentives, protective and debilitative factors that influence pressure within elite academy soccer. Nevertheless, it is important to discuss the limitations of the design and methodology of this intervention.

. A key struggle of studying elite sport and to determine any meaningful change in an intervention can be a result of small samples. Applied research and often case studies utilise small samples and utilising the same participants across an 18- week intervention can be a challenging as a result of extraneous factors such as; injury, illness, playing up or down a different age group. Therefore, the use of an ANOVA analysis in determining intervention effectiveness has limitations due to influence on statistical power. The larger the statistical power in a study, the less chance there is to identify a non-significant difference when there actually is a difference. A larger sample size increases the likelihood of determining statistical significance. Therefore, although the intervention analysis statistical tests were non-significant it is important to consider partial statistical effects on performance under pressure and the qualitative effects identified within this study.

Another limitation associated with the quantitative assessment of performance was inter-rater reliability. Within the assessment of coaches' inter-rater reliability marking, the 15-16 coaches marking was not aligned which may have skewed the scores within the simulation training. Subsequently, it is critical that coaches' conducting assessment interviews are provided with appropriate training to ensure that there is sufficient reliability among those marking tests. Whilst employing this particular live measurement approach was beneficial for the time of coaches; sport psychologists and senior coaches could have trialled more inter-rater reliability tests prior to the simulation intervention to ensure adequate consistency among interviewers.

Pressure was successfully manipulated within this study whereby players, coaches' and parents reported the simulation training to induce various level of pressure, across age-groups. Variation in perceived pressure may have occurred as a result of the lack of 'presence of others' variable present within the environment (e.g., parents, senior coaches' and social media).

The transference of coping skills from simulation training to competition could have also been limited by the lack of reflective practice following the simulation training as the reflective practice was directed specifically to competition rather than unpacking and reflecting on the simulation task. The lack of presence of the coach within the workshop may have also another reason why players may have discussed limitations in the transference of coping skills. The coach plays a significant role in developing psychological skills, a collaborative approach with coaches may have facilitated the reinforcement and transference of psychological skills by reinforcing key messages communicated within workshops in training sessions.

To reduce potential bias, this study incorporated a mixed-methods approach whereby data was collected from different information sources (e.g., quantitative and qualitative data, parents, players and coaches); to enable a more comprehensive understanding of sport performers' functioning. However, it is important to consider that the researcher's position within the academy was to supply the psychology consultancy for the previous two seasons. Subsequently, the honesty, sincerity and validity of intervention effectiveness self-report data could be questioned if they did not cope within the simulation training or find benefit from the sessions. An individual's self-report can also be influenced by memory bias, therefore there could be difficulties for players to recall their ability or perceived improvement over an 18 week intervention. The present findings have important implications for research on performance under pressure, as the present work underscores the role of simulation training and cognitive behavioural workshops as an intervention package to develop coping skills.

6.9.1 *Researcher Reflections*

Following the testing and the results from this study several key applied implications arose when delivering a pressure intervention within sport.

6.9.1.1 Key Influencers

The need to initially sell an intervention or an approach to stakeholders encourage buy-in and context for utilizing their pressure training was essential. A "sell" of the approach where the concept is presented to those involved (i.e., athletes, stakeholders, and people influencing the training environment) can initiate buy-in (Ludlam *et al*. 2017).

Arnold and Sarkar (2015) discussed how sport psychologists' work is more impactful when reinforced in the system, by those who support the athlete (i.e., multi-disciplinary team, coaches, and organizational decision-makers). Mesagno *et al.* (2016) indicated that the meaning key influencers place upon the performance of a task can evoke self-presentation concerns and perceived pressure to perform. Self-presentation is likely to influence the perception of pressure process in which individuals may monitor and control their performance due to how they are perceived and evaluated by others (Mesagno and Beckmann, 2017). This theory would also align with players' perception of demonstrating ability in the presence of others. Chapter six (intervention study) also reinforced the importance of the key stakeholders within the intervention. This thesis illustrated the importance in bringing those who shape the athlete's training environment on board, which could help achieve a common understanding of the rationale and intended plan for simulation training, and ultimately ensure that the focus of development is being reinforced and not compromised. Applied methods for capturing the key stakeholders can include "getting it into the language" to ensure people understand the aim and 'checking in' with stakeholders more regularly in order to ascertain progress, understanding and buy-in (or an absence of it!) (Ludlum *et al.* 2017). Buy-in may have increased coaches' flexibility to ensure the simulation training was scheduled for evening sessions whereby a larger number of spectators could have been present. This may have also attributed great meaning of the ST. Researchers have further suggested that key stakeholders might be used as a vehicle to facilitate ideas and

structure of sports psychology delivery (Nesti, 2010; Pain and Harwood, 2004). Coaches' from age groups 11-16 years adhered to the protocol of the study. However, within age-group 17-18 they did not adhere to the consequences and rewards of the pressure training, removal of the pressure leader board from changing rooms and limited time with players for the cognitive behavioural workshops. Subsequently, the validity of this age-group is limited.

6.9.1.2. Practitioner-Athlete Relationship

One mechanism of performance change as a result of the CB workshops could have been attributed to beliefs or a positive relationship with the practitioner, and potentially placebo effect. The placebo effect is a desirable outcome resulting from a person's expected and/or learned response to a treatment or situation. These can include but are not limited to expectation, previous experiences the interaction between participant and researcher, trust, empathy and the ritual surrounding the administration (Beedie *et al.*, 2018). Subsequently, one explanation for the results identified within this study could be enhanced by considering the possibility that placebo and nocebo effects might explain a significant percentage of outcome variance (Beedie *et al.*, 2018).

6.9.1.3. Researcher-Practitioner Conflict

Professional football clubs are enclosed worlds who do not easily accept the introduction of outsiders (Littlewood, *et al.*, 2014). Therefore, on arrival to the club the 'practitioner-researcher' role was not clearly established to staff. Being introduced as a 'research student', then a 'psychologist' resulted in the initial integration within the culture to be blurred. As a result of this lack of clarity, coaches' wanted to adjust the simulation training or amend workshop times due to the flexibility that was provided when conducting consultancy work within the soccer academy. It is important that if soccer academies or elite sporting organisations wish to engage in applied research coaches' and support staff are

provided with an educational background on how rigor and ecological validity is facilitated to ensure they can be as empathetic as possible with the structure that is provided when engaging within intervention research.

6.9.1.4 Individual Differences

The one-size-fits-all nature of the intervention (simulation training, CB workshops and reflective practice) did not completely suit all players as within group sessions it was sometimes difficult to appreciate the uniqueness of individual players when delivering a set program. During the delivery of the intervention it was evident that some individuals took more benefit from different components of the intervention than others. This reflection illuminated the benefits of a multi-component intervention package in which provided a broader range of psychological support to assist the varying needs of players across academy age-groups in developing their performance under pressure.

6.9.2 *Conclusion*

This study offers unique findings and contributes to the emerging literature on pressure training. In summary, findings from chapter six suggest that simulation training alone could enhance performance under pressure. However, alongside CB workshops and reflective practice could enhance performance under pressure through a broader development of psychological skills and proactive coping strategies. Particularly, age groups ages 11-12 and 13-14 demonstrated the greatest improvements within their performance under pressure (both DM and SE) following participation within the intervention. The differentiation in the effectiveness of findings between age-groups warrants future research into generating pressure and effectiveness of simulation training in different academy groups. Similarly, due to extraneous variables such as coach-rating reliability, small sample size and ‘buy-in’ the

general discussion will delve into greater detail the applied implication, strengths, limitations and future research from this study.

CHAPTER SEVEN: GENERAL DISCUSSION

7.0 Introduction

This chapter comprises three main sections: First, the key findings from this research programme will discussed with regards theoretical and applied implications. Second, the perceived strengths and limitations of this programme of research will be identified, and finally suggestions for future research in examining performance under pressure will be offered.

7.1 Summary of Key Findings

Academy soccer has been identified as an environment where there is pressure to perform; very few players become professional players, in fact, it is 0.012% of players. The ability to cope with pressure will be a requirement that will enable an academy soccer player to facilitate optimal performance within situations of perceived importance (Swann *et al.*, 2017). The aim of this research was to design, implement, and evaluate a performing under pressure coping intervention.

In order to structure the research and contribute towards the most efficacious and effective design and method in helping individuals develop the coping skills and strategies to withstand – or even thrive on – the pressure they experience a systematic review was conducted (Sarkar and Fletcher, 2014). Many pressure-coping interventions not have been originally proposed for sport, however the underpinning theory, design and methods utilised within different domains did have contextual relevance to sport. In summary, the systematic review identified that multi-component interventions comprising of simulation training (ST) and cognitive-behavioural workshops (CB) as most effective.

As outlined by Baumeister and Showers (1986) pressure is to be defined as the perceived importance to perform optimally. A key implication that derived from the

systematic review was that for ST to replicate pressure the task must comprise of incentives that are meaningful and significant. If the task is not deemed significant than the types of coping efforts employed by an individual may differentiate from that of a pressure moment (Lazarus, 1999). Therefore, in order for an individual to practise and refine the coping strategies which can shape the type, direction and intensity of emotion experienced, the ST must replicate meaningful invectives to evoke such coping responses (Bell *et al.,* 2013). Irrespective of theoretical literature (Sarkar and Fletcher, 2016) and empirical literature (Hodge and Smith, 2014) advocating for contextualizing ST interventions, the systematic review identified a lack of identifying pertinent incentives that could be integrated within ST so it can be effectively contextualized and bespoke to the performance and contextual needs of the individual.

If individuals can utilise coping resources effectively they can sustain or even over-perform under pressure (Swann *et al.,* 2017). Subsequently, alongside ST, CB workshops were proposed to enhance the ability of individuals' performance under pressure. However, a key objective for researchers was to identify the processes underlying coping resource accumulation and the various strategies that protect or debilitate performance specific to academy soccer (Swann *et al.,* 2017). By identifying such factors CB workshops could facilitate education targeting to enhance specific components underlying a positive performance under pressure. Similarly, identification of debilitative factors can enable the practitioner to provide players with methods to over-come factors attributed to under performance

In the context of academy soccer, age was suggested to be a factor which may contribute to an individual's appraisal of pressure and factors of influence (Reeves *et al.,* 2009). Subsequently, identification of any differences in perceived pressure, protective factors and debilitative factors between age-groups would be essential.

Aligned with this implication, study one (chapter five) utilised a qualitative method to explore how the perceived incentives that induced performance within academy soccer players aged 11-18. In order to ascertain a perspective that is more likely to capture a range of pressure experiences all one hundred and twenty-two male academy players (11-18 years) completed the pressure/tension subscale from the Intrinsic Motivation Inventory (Deci and Ryan 1994). The two players scoring highest and lowest from each academy age group then participated in focus groups to examine their experience of pressure. In order to compare and contrast perspective of pressure the perspectives of key influencers (parents, coaches', academy staff) were also captured, which did not capture major discrepancies within the players perspective of performance pressure. Following the analysis of data this thesis has created a model of situational (*presence of competition, time, presence of others, tangible rewards,* and *performance lifestyle*) and personal (*self-orientated, public self-consciousness*) incentives that induce pressure within academy soccer. This thesis established that there was little contrast across academy age-groups whereby perceptions and experiences of performance pressure by players age 11 also aligned with that of players age 18. This presents a clear priority for elite academy soccer that psychological practice is important throughout age-groups. The findings of this research also enable coaches', to create a soccer task that can enable soccer players to develop, refine and build a repertoire of coping skills under conditions that generate meaningful performance pressure.

Incorporating the implications from the systematic review and findings from study one the aim of chapter five was to design, deliver, and evaluate the effectiveness of an age-specific pressure intervention on elite academy soccer players' ability to perform under pressure.

Control group players participated within a contextually specific ST intervention, intervention group players participated within ST, CB workshops and three reflective diaries

following competition across the 6- week cycle. Conducting research within an applied setting resulted in significant drop-out due to either injury, illness or match recovery only. Subsequently, only data from simulation one and two was utilised. However, there was significant sample for players 11-12 despite player drop-out.

The key findings of this study established no statistical significance that performance under pressure improved as a result of this intervention. However, there was a significant statistical relationship with age and performance under pressure. The intervention study incorporated a small sample, and thus effect-sizes have to be larger in order for the ANOVA to detect significance. Consequently, it is important to also reflect upon the mean statistics and effect sizes from this intervention study which identified that only participants within age groups 11-14 improved their ability to perform under pressure (decision -making x skill execution).

There was 19% variance in the decision-making of players ages 11-12 over the course of the study but there was no effect of this being attributed to participating within the intervention. When examining the mean statistics those without intervention in the absence of coping strategies and protective factors delivered within the CB evidence for players 11-12 simulation interventions alone improved performance. ST may have provided individuals the opportunity to practice and refine coping enhancing the use of the appropriate coping strategies at the correct time may attenuate or eliminate the debilitative effects of anxiety, and help an individual perform effectively under pressure (Jensen and Wrisberg, 2014). However, for players of 11-12 years of age, in the third ST both intervention and control groups performance declined which questions the effectiveness of the intervention due to retention.

A key group of interest are ages 15-16 years where their performance reduced over the course of the intervention. Underpinned by the concept of pressure this may be attributed

to the lack of perceived importance attributed to the task. According to drive theories (Blascovich, 2008), should a performance situation not generate appraisals of demand or importance, there will not be a pressure response. Subsequently, following the first ST the perceived importance to perform may have reduced and not facilitated the improvement in performance attributed to pressure. It is also important to discuss that within the inter-rater reliability testing the coaches' marking of the pressure tests was significantly different and may have skewed results. Therefore, the lack of improvement identified within the tasks could be attributed to the limitations in using subjective measurements. Finally, players aged 17-18 execution of skill increased under pressure, with a greater improvement within the intervention group. One explanation for this finding could also be attributed towards a lack of task importance. Particularly, players inefficient decision-making processing was identified to impact performance, and the athlete responded with increased effort in their execution of skill. The variation in results makes interpretation of the effects of ST and CB workshops on performance under pressure difficult. Subsequently, qualitative results from interviews could better interpret and underpin the mechanisms that may have facilitated change in perform under pressure. The highest performing, lowest performing, most improved and least improved player were interviewed discussing their experiences of simulation training or cognitive behavioural workshops.

7.2 Practical Implications

The following section will discuss the findings of this thesis in relation the existing theory and previous research, focusing on the contribution that they make within the area of performance under pressure. A number of practical implications emerged from this program of research that may be of use to soccer academies and elite sport.

First, the systematic review conducted within this study identified that when attempting to develop an individuals' coping skills simulation training (ST) alongside cognitive behavioural (CB) workshops appeared to be the most effective which holds key practical significance to applied sport. Advancing upon the recommendations from the systematic review a case study approach was adopted drawing upon the limitations with the design, execution, and evaluation of past pressure interventions. One particular finding was the lack of contextualising pressure intervention, which led the researcher to develop an applied model to generate situational and personal incentives that can be used to induce pressure across academy soccer age groups 11-18. Identification of the pressure inducing incentives within academy soccer findings have practical broader implications for applied practitioners as they provide an indication of how coaches may go about systematically and methodically creating their own simulation training within soccer that is able to replicate the competitive, judgement and evaluative pressure alongside rewards and consequences that are perceived to be highly meaningful, desired, or unwanted.

In addition, this study identified the importance for coaches' to be educated on how best to support player's and the factors that they should aim to promote within training sessions, simulation sessions and competition. In the context of psychological coping, and from an applied perspective, it is crucial that individuals perceive that they have the resources to deal with the demands encountered in the competition environment (Neil *et al.,* 2011). By utilising Fletcher and Sarkar (2012) sport resilience model this thesis was able to contextualise factors specific to academy soccer players which has enabled the researcher to gain a deeper profundity of the protective factors that elite academy soccer players utilize and optimize to withstand pressure. From an applied perspective, coaches' and practitioners operating in academy soccer should identify and monitor the psychological characteristics outlined in this review that athletes need to develop in order thrive under pressure. Coaches for example, can

be more proactive in their players' development of psychological attributes that protect performance under pressure by incorporating them within their players training session. Similar to Olusoga *et al.* (2014) practitioners can utilise the factors identified to enhance players' awareness, knowledge, and use of psychological skills, as well as their performance under pressure.

7.3 *Strengths*

A strength of this thesis is the researchers' broad use of literature from further afield to generate understanding of the implications of the findings could be replicated within sport. The programme of research detailed in this thesis has advanced the knowledge and understanding that psychological research and the design, methodology can be beneficial when researching within sport.

One of the main strengths of this thesis is that the researcher was imbedded within the elite soccer academy environment for the duration of this thesis. This enabled the researcher to build rapport with parents, players and coaches. Being able to build rapport and trust with participants is key for consultancy efficacy (Sharp and Hodge, 2013), and possessing the necessary interviewing/questioning skills would be essential for eliciting information during the interviews to establish contextual incentives that induce pressure and factors of influence. However, it is important to present that this relationship was not assessed, subsequently a poor relationship with players such as communication, empathy, and rapport-building which are essential (Anderson, Mahoney, Miles and Robinson, 2002). Moreover, the time spent at the academy prior to the intervention enabled the researcher to have a better awareness of culture which enhanced the ability to plan and deliver appropriate sessions relevant to the needs and expectations of players. Understanding the culture of the soccer academy enabled the researcher to understand any practical constraints or limitations that may have occurred e.g. logistical constraints of equipment and training facilities (Olusoga *et al.*, 2014)

The programme of research in this thesis included both quantitative and qualitative explorations to develop an in depth understanding of performing under pressure and the perceptions of intervention effectiveness from those within the context (players, coaches' and parents). This was achieved by the inclusion of social validation interviews to better understand the mechanisms for change within the approach. The strength of this approach lies in giving the players a voice by documenting their perspectives. Aligned with the suggestion of Puig and Pummell (2012) the perspective of significant others was also captured. Involving academy staff and parents presents alternative perspectives may add further insight into players' observations or perception of soccer academy pressure and intervention effectiveness. In doing so, this study builds upon the previous evaluation from both quantitative and qualitative measures, and thus provides further support for the efficacy of the intervention program. Furthermore, from an applied perspective, the findings suggest that simulation and cognitive behavioural interventions in combination can assist academy players to evaluate highly pressurized competition more adaptively, as a challenge rather than a threat, should not only encourage more favourable emotional and attentional responses.

7.4 *Limitations and Future Directions*

This is the first study to test the effectiveness of a pressure intervention within academy soccer. Although it has provided innovative and interesting findings there are methodological limitations. First, within an elite academy setting the sample size already begins as small. Due to contextual limitations such as injury, illness and match-day recovery the group sizes reduce further, as a result the researcher could only obtain an A-B analysis for data. Within ANOVA analysis the statistical power of obtaining a significant interaction is lower in comparison to larger samples. Within sport, Hopkins (2018) argues about the context of meaningful changes, and that how 1% change within a clinical setting maybe trivial but

within an elite sporting setting this can be important and meaningful. Subsequently, it was important to assess the mean results of the intervention alongside the ANOVA analysis.

All players throughout the investigation engaged within performance analysis sessions and reflective practice as part of their regular training. Moreover, the coaches may have developed psychological skills naturally through the process of engaging with players over the time of the intervention. This is a challenging limitation to overcome, however by using the mixed methods approach the researcher was able to add greater insight into the specific mechanisms that impacted performance as a results of simulation training or the cognitive behavioural workshops.

A key limitation within the simulation training was ensuring that all the incentives could be captured within the intervention. The simulation task was the same pressure scenario across the 18 weeks of the study, coaches' and players discussed how of situational confidence could be particularly influential. For example, one coach discussed how this particular 2v2 drill was very important for the role of the central midfielder in contrast to winger. Subsequently, future research could investigate developing a number of contextual specific pressure scenarios to develop the task in accordance to those individuals. For example, within the interviews different players discussed different pressure moments that's were meaningful to them subsequently a within-subjects analysis of taking a specific skill the individual wishes to develop could provide greater implications for performance under pressure.

Due to logistical constraints such as parents at work and senior coaches' who may have been training their age-group at the time as the simulation training must incorporate this incentive within future simulation. Additionally, players were randomly matched to account for differences in growth, maturation and ability which may have influenced perception of

pressure. Drive theories (e.g. Inverted U; Spence and Spence, 1966) all recognise the importance of physiological markers (e.g., neuroendocrine changes, heart rate changes) and how physiological mechanisms may influence performance. This researcher project did not capture any of the physiological markers that may be indicative of pressure states. However, it is important to note that as the researcher captured post-evaluative appraisals of pressure to assess manipulation.

Another limitation of this research project was the compliance and engagement from key stakeholders. Future research that aims to develop and embed a pressure intervention within elite academy soccer should aim to utilise key stake holders such as the academy manager to facilitate the intervention within the academy programme and support coaches'. The final study also did not include the coach within the delivery of the cognitive behavioural workshops. Therefore, future research should focus upon ensuring coaches' are present within workshop sessions which may enhance the ability to integrate coping skills development into practical coaching sessions (Danish and Nellen, 1997). One key message that needed to may have also been better presented to coaches' was that coping development would not replace but instead add value to the technical and tactical development of players. This may have further enhanced the buy-in from coaches who may otherwise have been sceptical if technical development was not recognized.

Richardson and Reilly (2001) suggested that the influence of parents may have also influence players ability to develop and facilitate effective coping skills. More specifically, parents may positively or negatively affect a child's beliefs, values, and behaviours towards sport psychology through their interactions (Cahill and Pearl, 1993; Littlewood, 2005). Subsequently, a limitation within this study may have been a lack of information given to parents about the cognitive behavioural workshops. The reason for this lack of information

was to limit bias but future research could examine the influence of a parental coping programme on the influence of players ability to perform under pressure.

Finally, it would be useful to assess the generalisability of the incentives that induce pressure and the factors of influence to a range of academy soccer clubs. The FA introduced a classification system for the 72 football academies across England and Wales. There are now 4 categories of academy, and category status is determined by the provision (e.g. nutrition, strength and conditioning), training hours, facilities and level of opposition within the games programme (Premier league, 2011). Moreover, category one academies have a larger resource for players in comparison to a category four academy which may suggest that the perceived incentives for performance and factors that are protective or debilitative to performance under pressure could vary. Subsequently, future research could look into any difference into perceived pressures within lower levels of academy soccer.

7.5. Concluding Remarks

The findings of this thesis indicated the potential benefits of a performance under pressure intervention for facilitating positive changes in confidence, meta-cognition, emotional regulation and coping skills and subsequent performance within an elite soccer academy. This thesis has provided a novel insight to understand the perceived incentives that induce pressure and the factors of influencing performance under pressure. Specifically, the research has generated the development of a framework that can be used to create a simulation intervention within academy soccer. Additionally, the factors that protect and debilitate performance under pressure can underpin the development of coping skills require to perform effectively under pressure. It is hoped that the thesis inspires a shift in the emphasis of positive research and practice in the application of simulation within academy soccer in order to best prepare adolescent soccer players for pressure.

CHAPTER EIGHT: REFLECTIONS

8.0 Introduction

This chapter presents my personal reflections having engaged within a Category one soccer academy for three years as a researcher. Gilbourne and Knowles (2010) noted that critical social science is thought to encourage creative, critical and evaluative activity. This reflective chapter will serve as a summary of in and on action reflections (Schon, 1983) from the start to end of the research and practitioner experience. By exploring my experiences within sport from an early age I am able to underpin my philosophy of practice and how my development as both a practitioner and researcher has influenced my perception of performance pressure and the development and delivery of the intervention. This chapter will also discuss the sensitive personal accounts that influenced contextual understanding of the soccer environment, the development and evaluation of the effectiveness of an evidence-based psychological intervention. These accounts will depict the critical moments within the PhD which were predominantly underpinned by clarity of my role within the academy, key influencers and supervision.

8.1 Presenting the Self

The following account considers my journey from the start of my research experience to the values, and beliefs that have developed throughout this program of research. By drawing upon the highly personalized accounts of our experiences we are able to extend our knowledge and understanding of specific phenomena (Sparkes, 2000). Prior to my reflections it is important to make the reader aware of my biographic positioning in relation to the research process (Littlewood, 2005). The researcher is an integral part to the action research process because of the multiple roles played by this person including program developer, deliverer and evaluator. It is important to understand 'who the researcher is'

because their values, beliefs and prejudices will have an impact on the way in which the research is planned, conducted, managed, and interpreted.

Since an early age, sport has always been my passion. When I was 10 years old, I joined a local boys' soccer team. Being the only female never crossed my mind, I loved everything about playing competitive soccer. However, a couple of years later, when I was 12 I was informed that I was no longer able to play in the same team as my male friends. I continued to participate in playground games during break times at school. Chelsea football club held regular community training camps and it was attending one of these sessions with my best friend where I was offered trials for the centre of excellence. I thought about it, and I believed that by attending these trials, football would no longer be my sport for fun, it would become a time of judgement and evaluation and pressure. Soccer was also seen as an 'unfeminine' sport by my peers, so by perusing the sport I risked rejection from my peers. This reflection is my first illustrative example of the various pressure that can occur when participating within sport. Particularly, the inability to cope with failure, importance of social evaluation and expectations can result in the complete withdrawal from the sport.

At college I was introduced and began to participate in athletics; particularly cross-country and middle-distance running. As a new individual within the running culture, the coaching environment was different to my early experiences of soccer. Particularly, the training sessions were built on the philosophy of 'training as a you race' rather than technical skill drills and small sided games. Reflecting on my past experience I did not understand the rationale for the technical or tactical training drills as I did not think about these in the game. In contrast, to my later experiences within running I understood the importance of understanding the rationale of training and its importance in preparing the individual for competition

In contrast, to my previous experiences of soccer the coach had tried to embed the importance of social support within the training group, reward effort (e.g. praise) rather than only praise those executing the quickest times. The way training sessions were created were to ensure that there was no social hierarchy, for example sessions were designed so that an Olympian and club level runners could train together. This was a contrast to my earlier experiences within soccer where there was a divide within ability levels and teams were selected to train in accordance to ability level. I have since competed up to national level for the 1500m and BUCS national track finals. In contrast to my early experiences, my perception of pressure is a stark contrast. Within soccer I would be ashamed of making mistakes, a failure if I did not get selected. In contrast, as an athlete I have performed against females who have competed for Great Britain, participated in races that were live streamed on the internet, and received financial support with expectations of achieving certain position. However, my experience of managing performance pressure was significantly different, particularly my change of 'can't' to 'can' aligning with how appraisal can be so influential within the performance-pressure relationship.

I had noticed a significant relationship between my thoughts and performance success, particularly during my sport science degree. I developed an understanding for how psychological skills could impact upon decision-making and self-regulatory processes during competition. Following my sport science degree, I pursued an applied sport psychology Masters degree which examined in greater detail cognitive processes, the impact of thoughts, and how these may impact on performance and well-being. The development of my theoretical understandings illuminated how powerful the psychology of an individual is, and how if psychological skills and strategies are developed from a younger age this may underpin the coping efficacy and effectiveness of performance under pressure. As a result of

my interest in developing performance the vast majority of the reading I engaged in was focused around athlete cognitions and coping interventions.

The PhD studentship examining performance under pressure at a soccer academy provided an opportunity to gain much needed applied experience and test my ability to apply theories to real world 'participants' i.e. players, parents and coaches'. Prior to my PhD my engagement my philosophy my views of performance pressure were predominately negative, I believed that psychological skills would enable individuals to cope under pressure, because pressure could be debilitative. As a result of my past experiences within soccer I felt instinctively motivated towards improving the situation for the young players. This was to ensure that they could fulfil their full potential and not become disillusioned with the sport as I did. However, my current views have performance pressure has changed throughout my three years' experience as a result of key events that will be documented within this chapter, theoretical research and better understanding of performance pressure as a concept. Consequently, although psychological development may help individuals withstand the negative implications of performance pressure, my current views align in the contention of utilising where psychological skills to enhance individual's performance and over-perform.

The experience of conducting this research project has been emotionally and mentally challenging but rewarding in equal measure. It has been suggested that the nature of the challenges encountered by sport psychology practitioners operating in elite and professional sport teams has been inadequately considered to date (McDougall, Nesti, and Richardson, 2015; Nesti, 2010).

The nature of my dual role as researcher and practitioner role has exposed me to a variety of critical moments. Nesti *et al*. (2012) suggested that a more useful and dramatic phrase that could be used to describe these situations are 'critical moments'. Critical moments

may be small or large events but will inevitably have an impact on a person's sense of self (Nesti *et al.,* 2012). The moments I have selected within this chapter were moments of growth as a researcher and practitioner which resulted in the development of understanding opportunities to apply theory or the ability to understand contextual factors influencing practice.

For example, the heavy snow fall during November where the simulation was to be conducted on the scheduled days and ensure the indoor facilities were still able for use and that all players could get to the training ground. It became even more important to ensure all coaching, administration and parents were aware of the importance of the testing being conducted on this day as the following week the players had two weeks off for the x-mas break. This was a frustrating and moment of pressure for me as I had one opportunity to get the performance testing of the players other-wise it would have fallen out of synch with the 6-week cycle. I was faced with no replies from the under 15-16 lead coaches' regarding the organisation of the session when emailing, texting and calling.

Whilst this was an experience that evoked negative and unhelpful emotions such as frustration, anger and anxiety, it helped me align with players' perceptions of uncertainty and the benefit of the intervention. Particularly, in this instance, the pressure to organise and ensure the simulation training could happen- as there was one opportunity. I designed and delivered the cognitive-behavioural workshops to players, so I arguably had a great understanding of the different techniques and strategies to manage the pressure. However, what this did demonstrate to me was the difficulty in truly learning and automatically applying psychological strategies and coping strategies unconsciously. . Yes, theoretical evidence demonstrates that with a challenge appraisal you are more likely to execute an effective performance but what this critical moment demonstrated to me was without having experienced such pressure before, the challenge in applying effective coping is not easy.

Although, I was able to execute and complete the task to get the needed outcome (e.g. all players participating within the pressure testing irrespective of the weather) reflecting upon this experience will enable me to be better prepared for such instances in the future. For example, instead of focusing on what I could not control, focus on what I could. Finally, understand that if I could not get the testing done this is part of a research process and provides findings to demonstrate the challenges of working within applied settings. As a result, this has taught me to understand the power of experiences to learn, develop and refine coping skills and the importance of supporting individuals in their reflection of such experiences.

8.2 *Entrance into the Culture*

Gilbourne and Richardson (2006) suggest that practitioners will be more successful when working with sporting establishments if they can become embedded in the existing regimes in which the given club already operates. Therefore, my first year at the soccer academy was primarily to immerse myself within the culture and understand organizational, performance and personal demands that coaches, support staff and players may come across. I had no knowledge or experience of embedding within a culture, however I had experience of observation in order to familiarise myself with the culture of elite soccer. I was aware of the period of 'hanging out' as part of the process of entrance into service delivery (Andersen, 2000). Having been heavily embedded within the athletics culture a challenge was assuming that all high-performance cultures were the same. At times I found myself saying 'but its just a swollen ankle', 'he should be so lucky he has all this', 'they are 11 why are they being given so much'. The challenge for me was how I made sense of and create meaning in the world in which I was in, in comparison to my previous experiences. A critical change in my perception of soccer occurred as a result of a combination of both consultancy work with individual players and study one which examined the incentives that induce pressure within

the academy environment. Players of various ages disclosed some personal experiences that demonstrated how without a lack of coping can heavily impact performance and well-being. Players can 'look' disinterested as a result of too much pressure, for some individuals it impacted their self-confidence and belief to achieve in not only soccer but school. As a result of these experiences, I felt more confident and passionate in my delivery of CB workshops as they aligned with my values as a practitioner in developing both players and people. Similarly, within the context of research it is important to capture such experiences which may facilitate the buy-in from coaches due to the perceived importance of assisting coping with pressure.

To facilitate 'buy-in' Wagstaff, Fletcher and Hanton (2012) highlighted the importance of language. A clear focus of a researcher-practitioner should be placed on observing and listening to individual meanings and intentions before we interpret. A key word which influenced my interaction within the environment was the term 'busy'. At the early onset of my experience this word was used a lot when I initially heard '*oh god, he's being busy again'*. This was used in a derogatory way and referred to when colleagues went beyond their duty to attend meetings that they weren't explicitly asked to attend, send emails with additional information or called meetings to assist in the communication and running of the environment. I was working hard and providing as much information as I could. My early experiences of '*busy*' impacted my mind-set from then on with paranoia that I was going to become an individual that annoyed the environment rather than assisted and supported. It is in reflection now that I realise my challenge was to distinguish between my role as a professional and my insecurities of being liked within the environment and avoid this label.

However, the insecurities in me as a developing practitioner and researcher over-took and I placed a focus on demonstrating my value as an individual and understanding of the culture to gain membership into the soccer context. I was going to have to convince people

that the identity (self) I brought to the field should be accepted and respected in order to do this I tried to provide as much support as I could early on, making myself available whenever I was called upon. The implications of this blurred my role further, and somewhat did not provide clarity to coaches on what my role truly was and subsequently had implications for when I required time away from the academy to focus on the systematic review. The importance of being liked may have also aligned in their approach to the intervention whereby I did often here 'Sofie's PhD' or 'we've got to do this for Sofie'. This would have suggested some coaches' may have approached the intervention delivery like they were doing me a favour which would reduce perceived meaning of the task but also evidence an imbalance of power.

8.3 *Knowing Your Role*

The traditional model of research creates a clear division between the researcher, and the practitioner. Bensimon *et al.* (2004) suggested that in traditional research, the researcher identifies the problem to be studied, selects the appropriate methods, collects and interprets the data, and reports the findings. Whereas a practitioner and particularly a practitioner in their development years reflect upon their personal philosophy, and its congruence with their applied behaviours (Lindsay *et al.*, 2007). This had significant implications when developing and designing the pressure intervention.

During the early onset I was developing my philosophy of practice, as discussed by Martindale and Collins (2007) this was heavily underpinned by the theory taught on my graduate programs. I completed an applied master's degree, which place emphasis on the importance of developing a philosophy of practice. I wasn't entirely certain of other philosophical approaches to practice other than that of cognitive behavioural models and theories. Although I was introduced to humanistic and existential philosophies I did not feel

entirely competent in applying these theories to case studies or assignments which subsequently influence my early stages of practice when engaging within the football club. Given the little understanding I had of the players as individuals developing an extensive needs analysis was an important process when commencing applied practice, allowing a true understanding of the athlete and their needs to be achieved (Gardner and Moore, 2005). Therefore, I initially engaged within a cognitive behavioural philosophy. However, over the course of player sessions I recognized that my cognitive behavioural approach to consulting was not always effective and, instead of consistently exploring cognitions and drawing on interventions that targeted these, I found greater appreciation for the athlete as a whole. Particularly, every athlete has a story and it's important to understand how that may affects their ability to interpret thoughts, feelings and behaviours. Subsequently, I felt complementing my approach with underpinning of humanism was important. Particularly, rather than continue to teach, it was important for me to reflect upon players own free will and let the player develop their own self-awareness and understanding of what psychological skills would be beneficial for them to develop and achieve. The prominence of the cognitive behavioural philosophy was identified within the systematic review and as a result influenced the philosophy of the intervention.

While this partially aligned to my personal approach as a practitioner, during the delivery of sessions although underpinned by a CBT framework I tried to incorporate discussions that evoked active listening, self-disclosure but remained to stick to the fundamentals of the workshops due to the research programme. Rogers (1951) states that there is a need for practitioners to remain congruent with their values and beliefs whole-heartedly. Moreover, a key influencing factor within this research project is did players view or recognise a potential change in philosophy that undermined the effectiveness of the workshop delivery.

As part of both my BASES supervised experience and PhD, I regularly engaged in structured planning and reflection upon the work I have completed with players, parents and coaches. I have been able to become more critical of my delivery and subsequently develop in my effectiveness as both practitioner and researcher. For example, the development of an awareness of myself allowed me to uncover specific weaknesses (e.g., ability to not take events personally). Although some players may not have perceived benefit from the intervention I experienced no challenges with the players when planning or delivering workshops or simulation training, the greatest challenge was the coaches' 'buy-in'. It took self-reflection to identify that not everyone will understand or support the intervention and subsequently it would have been my role to try and engage these members of staff rather than avoid confrontation.

8.4 *The Challenges of Translating Theory to Practice*

A particular challenge was the contrasting fast-paced soccer environment with the rigorous nature of academia- particularly conducting a systematic review. Within this period. I commonly heard '*they need more pressure*', *'let's just create pressure and see what happens*' '*what are we waiting for why can't we just get started on pressure testing*'. My challenge at this point was to capture such coaching enthusiasm but ensure that it did not become detrimental to the effectiveness of the intervention or to player welfare, for example by presenting simulation training in an open structure. In this time the lead academy psychologist and I delivered CPD sessions to coaches' surrounding the theory of performance under pressure. This was particularly beneficial as the research and applied world could work together and generate a pressure simulation training session that could be measured scientifically.

8.5 *Developmental Considerations*

On arrival to the academy I had little knowledge on adolescent psychology. I believed that my strengths and passion aligned with the delivery of psychological provision to older players, I also felt a lack of confidence within my ability to deliver to younger age-groups such as the under 11's. As a result, at the start of my integration within the academy unconsciously more time was spent around this age-group and potentially separated myself away from understanding the demands and pressures from each age-group. It wasn't until I delivered my first workshop did I understand the influence and importance of the provision. It was a key moment where players were enjoying the session and enthusiastic learning about the psychology of the game. With a lack of confidence, it was extremely valuable engaging in wider reading of child developmental literature when working with youth players. This allowed me to tailor the content of my pressure workshop sessions more effectively to each group, ensuring that the language, tasks, and techniques I chose to adopt were suited to the varying ages.

Developmental differences of the perceived pressure and efficacy of the simulation intervention through watching the players also had an impact on my own self-efficacy in the intervention. Within simulation one, I could see a shift in the usual emotions and body language displayed, particularly of players ages 11-14 e.g. an increase in players asking more questions or silence from players that were usually extroverted. This made me feel excited as I was confident at this point you could generate pressure within a training context. Aligned with the findings of this study it was evident that such dramatic shift in behaviour was clear in simulation one and two. Within simulation three the number of questions reduced, the focus on performance rewards and consequences diminished and it did appear more like a training session- I believe this is due to the familiarisation.

Within age groups 17-18 comments such as '(the coaches) won't go through with it (the consequences)' appeared from the outset of the simulation training. This was frustrating

as I sadly knew the players were right, this probably would have been the case. I was also frustrated as this could have been an opportunity to develop a need that was expressed by the 17-18 coaches'. This lack of belief expressed by the coaches' was demonstrated by the numerous rescheduling of the simulation tasks, taking down of the leader boards, negative comments within coaches' meetings ('it's pointless') and body language when reading out the instructions of the simulation in front of the players. This was challenging for a researcher as I was concerned on the impact it had on other age groups perception of the effectiveness of the simulation training. I do not know if the lead coaches from this age group did try and influence other age groups which highlight the challenges when working with large elite organisations. The 17-18's coaches' were happy for the CB workshops to go ahead but did express in a conversation that such interventions are 'too late' and is difficult to change 'the mind-set of some of these lads' and a call for more individual support was necessary. This did make me question whether the CB workshops were beneficial at all, but I remained confident that it was appropriate to test the effectiveness of the CB workshops as was taken from the systematic review and the importance of having evidence-based practice at this time was highly beneficial.

8.6 *Key Stakeholders*

Some of the challenges that I faced within the professional football club occurred as a function of the organisational culture. Time was spent to become embedded within the organisation and facilitate the development of relationships and rapport with key stakeholders (Ravizza, 1998). However, as a researcher what I did not consider was in professional sports such as soccer, staff changes are frequent and teams rarely contain the same players and staff from season to season (Eubank, Nesti and Cruickshank, 2014). On the occasion where I reported back the findings study one there was a new coach joining the soccer academy who had extensive experience within international soccer, of who had experience in sport

psychology and his own personal philosophy (humanistic and existential) of how it should be delivered within an academy.

In contrast to the experiences of Rowley, Earle and Gilbourne (2012) the lack of commitment to the research programme was from the key coaches rather than players. I was unaware of the influence that key stakeholder within the environment. My experiences aligned with Nesti (2012) who stated that managers have a significant influence on the opportunities a sport psychologist is granted to be successful. After a conversation about the performing under pressure intervention it was evidenced that the two philosophies of the CB intervention, and his humanistic philosophy did not align. His influence on the lead coach being part of the research become overpowering, who originally was involved in the design and execution of the simulation drill. For example, in preparation for one of the performing under pressure sessions the coach had re-arranged the testing several times, irrespective of the research structure that was trying to be achieved. I became quite frustrated when I felt the lead coach was no longer committing enough effort to try and accommodate the programme or feel engaged in wanting to attempt to see the potential benefits. My frustration had most probably arisen because I knew that there would be significant ramifications for my thesis and the corresponding research I was aiming to complete, which may have fuelled the previous comments (e.g. 'Sofies PhD') that could have influenced buy in. Instead of trying to support this coach my response was confrontational rather than understanding and supportive. Self-awareness of this factor has given me the motivation to improve those factors that may have limited my delivery. Rather than confrontation I have understood that not all coaches are confident to speak out and the lead coach may not have understood the simulation programme initially.

8.7 *Supervisory Relationship*

An important component to any PhD is the supervisory relationship. I began this process within the advanced student/ novice professional stage. During this phase, trainee practitioners often face the realization that they need to adopt new counselling perspectives, experience self-doubt and anxiety regarding their competence. A supervisor has the potential to influence the research process by encouraging reflection, be a theoretical sounding board, and if they are also embedded with the environment, a cultural understanding that can also enhance the effectiveness of sport psychologist (Rowley *et al.,* 2014).

My supervisors within research and applied practice could not have been any different. I had one academic supervisor who would challenge me to articulate the steps in decision-making and reach deeper levels of insight. In contrast my practitioner supervisor provided little challenge and little support. To ensure the intervention was delivered to its full potential quality supervision generating and exchanging new ideas, receiving personalized feedback, and considering situations from a number of perspectives was imperative. Although anxieties and negative emotions are part of the typical developmental path the lack of supervisory relationship did impact my confidence in my reflections and sometimes led to a lot of self- doubt.

A critical moment within my PhD journey was meeting with two trainee psychologists at another soccer academy. I was able to discuss the challenges and benefits of our experiences which was beneficial not only in terms of informational support but esteem support. This interaction made me realise the importance of effective supervision for trainee practitioners and how group supervision could have been another way to support my development.

8.8 Conclusion

The narrative from this chapter may help support future PhD students who wish to engage in an applied programme which may allow considerations of the transferability of my

experiences to their own practice situations. My experiences evidenced the influence of key stakeholders within an applied or research process for integration of psychological principles into training. My experiences may also assist other soccer academies in supporting future students in developing their practice through giving them the appropriate learning experiences and ensuring they have adequate provision when delivering psychological provision alongside research.

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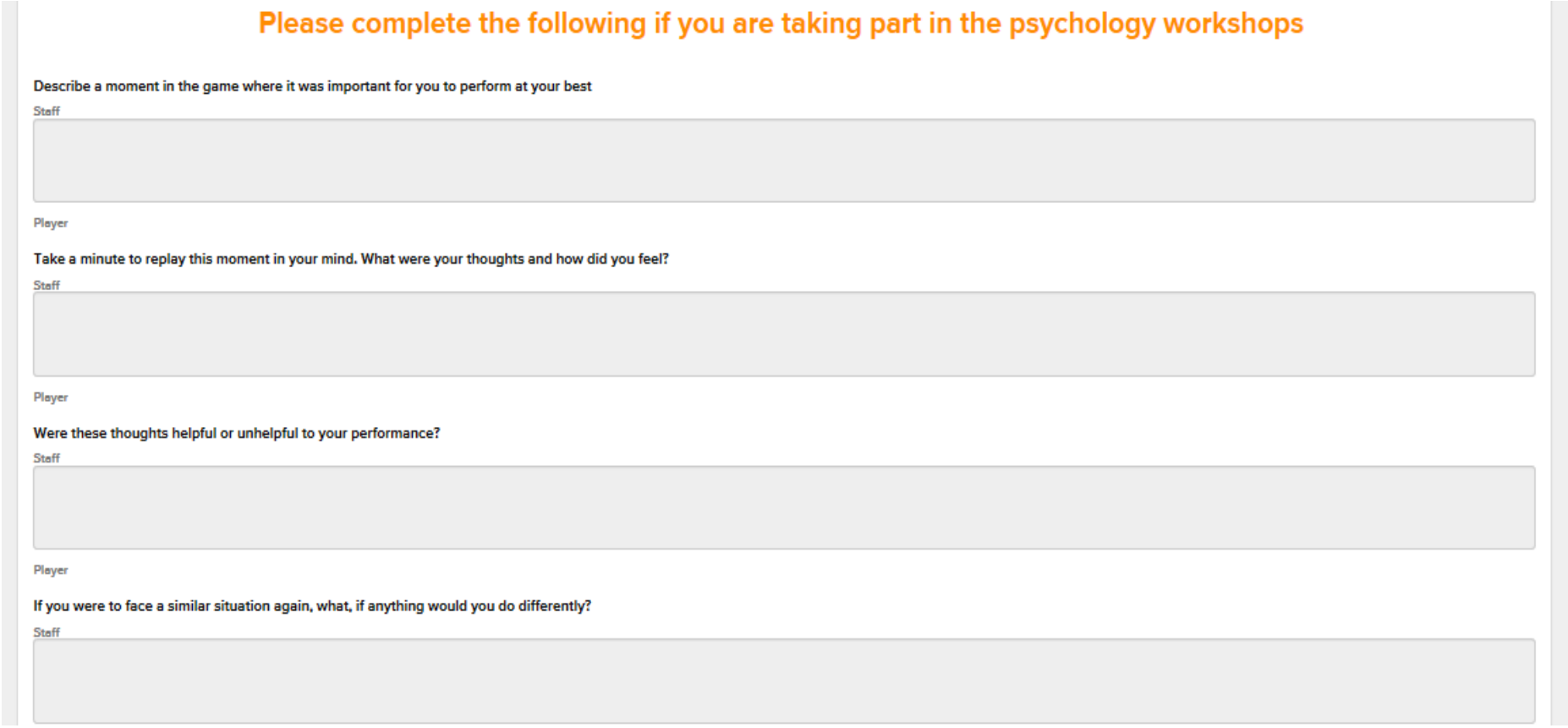
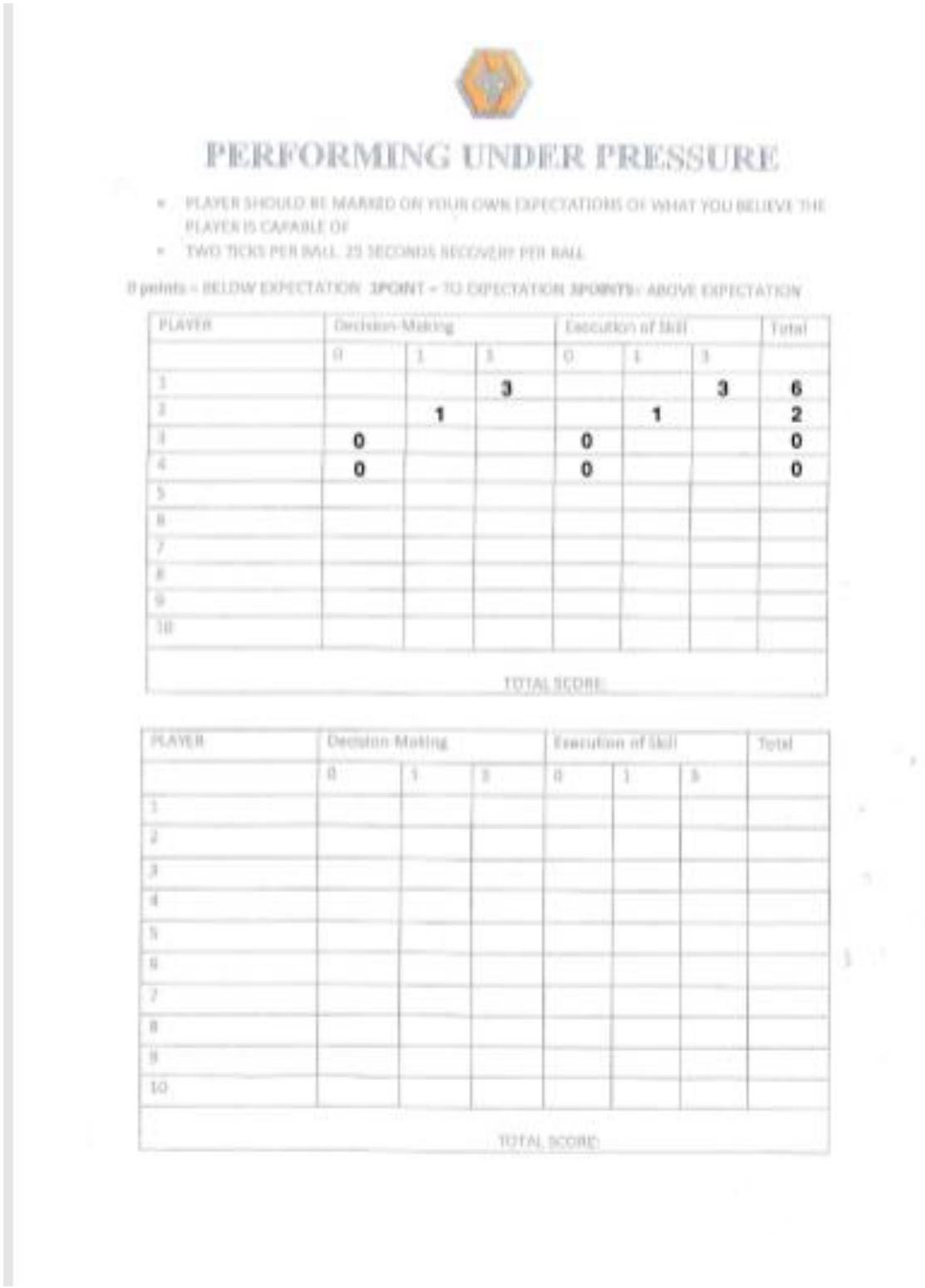
Appendix 1.

Reflective practice task that was inserted into the soccer player management application online



Appendix 2. Coaches scoring sheets, this is an example of a coach scoring during testing. The coach is marking two players during the testing which is why there are two marking boxes.



PERFORMING UNDER PRESSURE

- PLAYER SHOULD BE MARKED ON YOUR OWN EXPECTATIONS OF WHAT YOU BELIEVE THE PLAYER IS CAPABLE OF
- TWO TICKS PER BALL. 25 SECONDS RECOVERY PER BALL

0 points = BELOW EXPECTATION 1POINT = TO EXPECTATION 3POINTS= ABOVE EXPECTATION

PLAYER	Decision-Making			Execution of Skill			Total
	0	1	3	0	1	3	
1			**3**			**3**	**6**
2		**1**			**1**		**2**
3	**0**			**0**			**0**
4	**0**			**0**			**0**
5							
6							
7							
8							
9							
10							
TOTAL SCORE:							

PLAYER	Decision-Making			Execution of Skill			Total
	0	1	3	0	1	3	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
TOTAL SCORE:							